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ABSTRACT

The purpose of this study was to examine similarities and differences in how schools and school districts have successfully implemented the California mathematics and science curriculum frameworks. Implementation factors include: the use of cross-role teams and implementation plans; assistance; administrative commitment and pressure; program latitude and fidelity; and teacher effort. The sample consisted of 14 elementary schools that were actively engaged in the implementation of the California mathematics and science frameworks. Methods of data collection used were interviews, questionnaires, and classroom observations. Presented in tabular form are: (1) names, characteristics, and responsibilities of district and school level cross-role teams; (2) description of the implementation plan; (3) programs and materials; (4) initial content, skills, and awareness training; (5) administrative commitment, pressure, and monitoring; (6) extent of latitude given by district; (7) evidence of fidelity of school; (8) ongoing assistance; (9) nature of external linkages; and (10) teacher effort. The major findings of this study are included. (KR)

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FACTORS RELATED TO SUCCESSFUL IMPLEMENTATION OF NEW MATHEMATICS AND SCIENCE CURRICULUM PROGRAMS IN CALIFORNIA

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Purpose:

The purpose of the study was to examine similarities and differences in how schools and school districts have successfully implemented the new California mathematics and science curriculum frameworks. Implementation factors included: a) use of cross-role teams and implementation plans, b) assistance, c) administrative commitment and pressure, d) program latitude and fidelity, and e) teacher effort.

Methodology:

The purposive sample consisted of 14 elementary schools located throughout California. Selected schools were actively engaged in the implementation of the mathematics and science frameworks. Three methods of data collection were used: interviews, questionnaires, and classroom observations. The cross-site analysis generated detailed descriptors and high inference summary ratings.

Findings:

The major findings indicate that:

1. District cross-role teams were critical in the adoption and implementation of the mathematics and science frameworks while school level cross-role teams were important to the

implementation process.

2. District office specialists and resource teachers took the lead in the initial awareness, content, and skills training.

3. Outside linking agents built teacher capacity in lead teachers, and provided implementation resources.

4. Most districts provided a high degree of awareness training in mathematics and science which coincided with the textbook adoption cycle.

5. All districts used a multitude of materials and programs and had an ample supply of manipulatives for classroom use for mathematics, but science materials were lacking at some sites.

6. Pressure to implement the mathematics and science programs came from the "bottom-up" as well as the "top-down" and appeared to produce the same result of keeping programs in place.

7. Smaller districts allowed more latitude, resulting in programs being "watered-down."

8. Teacher effort in mathematics was much higher than in science.

Table 1 Names of District Cross-Role Teams

Descriptor	Site D	Site B	Site N
Names of district cross role teams	* K-8 Advisory Committee * Project Team	* Cross-Role Team * Textbook Adoption Committee	* Adoption Committee * SUM (group of principals)
Team membership of district cross role teams	* Teachers * District office reps * Principal	* Board of Ed. members * Deputy Superintendent * SUM (principals) * Director of Curriculum, Elementary * Director of Staff Training, Elementary * Director of SIP, Elementary * Teachers * Elementary School Site Reps * Assistant Superintendent, Elementary * Superintendent * Math mentor teachers * Director of Comp. Ed., Elementary	* Math Curriculum Coordinato * Principals (SUM) * Teachers
Selection of members of the district cross role team	* Teachers volunteered & were then screened by the administrators and Curriculum & Staff Development Services * Principals recommended teachers * Assistant Superintendent recommended principals & the Administrator of Curriculum & Staff Development Services submitted recommendations to Deputy Supt.'s Council for final approval	* SUM principals were appointed * Math reps were selected by principal * Grade level teachers were selected	* Math Curriculum Coordinat set up a volunteer committee composed of teachers & administrators for Adoption Committee * 4 or 5 principals got together to form SUM

Descriptor	Site E	Site O	Site I
Names of district cross role teams	* Initial Planning Team * Planning Team * Instructional Leadership Staff * Curriculum & Staff Development Council * Curriculum Study Committee * Curriculum Council	* Associate Superintendent o Instruction's Cabinet * Math Curriculum Committee * Math Coordinator's Grade Level Group * District Instruction Committee	* Textbook Adoption * Mentor Selection Committe * Superintendent's Forum * Staff Development Cross Role Team
Team membership of district cross role teams	* Deputy Superintendent of Instruction * Director of Elementary Ed. * Director of Curriculum & Staff Development * Director of Special Ed. * Director of Student Services * Director of Vocational Ed. * Director of Intercultural Education * Assistant Superintendent * Staff developers * Teachers * Mentors * Principals * All directors of special programs * Superintendent	* Directors of Instruction * Coordinator of Curriculum * Coordinator of Special Ed. * Director of Elementary Ed. * Director of Intermediate Ed. * Director of Secondary Ed. * Teachers * Union representatives * Associate Superintendent of Instruction * Math Coordinator * Principals	* Assistant Superintendent * Staff developers * Teachers * Principals * Director of Pupil Personnel & Instructiona Services * Mentors
Selection of members of the district cross role team	* Curriculum & Staff Development Council volunteered * Deputy Supt. of Instruction appoints District Planning Team * Director of Curriculum & Staff Development selects Instructional Leadership Team	* Math Committee members volunteered, are recommended by site principals, or are union representatives * Assistant Superintendent o Instruction appoints the members of his cabinet	* Teachers for Superintendent's Forum are elected * Mentor selection committee teachers are elected by their peers

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Descriptor	Site J	Site G	Site H
Names of district cross role teams	* Math Committee * Textbook Adoption Committee	* Cross Role Team * Grade Level Teams * Math Committee	* Curriculum Steering Committee * Math Committee
Team membership of district cross role teams	* Teachers * Resource teachers * Principals * District math specialist	* Teachers * Mentors * Principals * Assistant Superintendent of Instruction	* Assistant Superintendent of Curriculum & Instructi * Staff developers * Parents * Teachers * Mentors * Principals
Selection of members of the district cross role team	* Teachers on Math Committee either volunteer or are selected by the principals * Resource teacher is recommended by principal or district office administrator * District Math Specialist is selected from a pool of school site resource teachers	* Principals & teachers volunteer * Asst. Supt. appoints each principal to a textbook, implementation, inservice, or grade level committee	* Teachers volunteered and were then selected by staff developers * Parents were asked by Assistant Superintendent and staff developers * Principal asked each teacher to join a curriculum committee

Descriptor	Site A	Site [illegible]	Site K
Names of district cross role teams	* Curriculum Review Team	* District Curriculum Committee * Math Curriculum Committee	* Curriculum Committee
Team membership of district cross role teams	* Principals * High school administrator * Supervisor of Compensatory Programs * Supervisor of Special Projects * Math Department Executive (part-time high school teacher) * Teachers * Middle school administrator * Assistant Superintendent, Educational Services	* Superintendent * Assistant Superintendent * Teachers * Department chairs * Business manager * Principals * Mentors	* Assistant Superintendent * Teachers
Selection of members of the district cross role team	* Teachers volunteered	* Most members volunteered * Principal invited all new teachers to become a member of a curriculum committee in their area	* Teachers were elected by association members * Teachers were appointed by principal

Descriptor	Site C	Site F	
Names of district cross role teams	* Curriculum Council * District Faculty Council * Staff Development Committee * District Advisory Council * Testing Committee	* Textbook Adoption Committee	
Team membership of district cross role team	* Superintendent * Director of Testing & Special Services * Assistant Superintendent of Business * Principals * School Board members * Special Education * Director of Curriculum & Instruction * Mentors * Consultants	* Assistant Superintendent * Site representatives (teachers) * Principals	
Selection of members of the district cross role team	* Members volunteer	* Textbook Adoption Committee members volunteer	

Table 2 Unique Characteristics of District Cross-Role Teams

Descriptor	Site D	Site B	Site N
Unique characteristics of district cross role team	* Project Team is mainly concerned with textbook adoption	* SUM principals are initially appointed to work with textbook adoption committee in the adoption phase & later provide leadership to teachers	* Math Curriculum Committee headed up the Adoption Committee
Type of training to the district cross role team	* 6 months of training with guest presenters, district office presentations, & a review of the framework * Met 2 times each month	* One Board member was a math mentor teacher in another district & another was a member of Curriculum & Standards Committee & both were members of ATC coaches club * SUM principals received training in creating a vision, etc. * School site reps had monthly meetings * Grade level teachers got it from publishers & effective schools workshops & at monthly district training sessions	* Adoption Committee received inservices from the publishers * District has a well established staff develo ment program that was already in place * All 6 math mentors have already been to the training
Outcomes of the training	* Purpose of the training is to insure that all of the committee/team members are highly knowledgeable regarding the framework, latest research concerning the curriculum area under consideration, as well as other information regarding textbook selection process at the state & district levels	* Monitoring techniques for math implementation were practiced * Served as trouble shooters for their staffs by assisting teachers and providing demonstration lessons * Administrators determined a 2 year imitial implementation phase of the math program	* 2 mini conferences were used to bring teaching staff & principals together in order to improve articulation & form the foundation for the development of the teach representation role * The regular teacher/principal/staff development occurred in curricul & personnel meetings * on-going inservice training based on teachers' concerns

Descriptor	Site E	Site O	Site I
Unique characteristics of district cross role team	* Professional Development Team was trained to train teachers in strategies	* District Director of Elementary Instruction sees that the math program is implemented	* Mentor Selection Committee also forms the committee to read & determine awards of mini-grants for classroom instructional improvement projects like CTIIP
Type of training to the district cross role team	* Professional Development Team was trained to train teachers in strategies such as cooperative learning * Mentor teachers were highly trained	* All beginning teachers received one week of generic training which consisted of reviewing the district curriculum, clinical teaching strategies, and assertive discipline training * Some have taken classes at US Bakersfield & Fresno * Some mentors have received training during the summer	* None
Outcomes of the training	* Professional Development Team trained teachers * Implemented a plan	* A core group of teachers are then trained well enough to train other teachers * Core teachers team with other teachers at the same grade level	* None

Descriptor	Site J	Site G	Site H
Unique characteristics of district cross role team	* Each member of the team is given an opportunity to support math programs through presentations at inservices, involvement in summer Math Curriculum Committee, coaching teachers, & providing demonstration lessons	* Asst. Supt.'s job fades as cross role team starts to include volunteers, principals, & teachers interested in math	* Staff developers are major players & serve as a liaison with teachers and administrators
Type of training to the district cross role team	* Resource teacher attends monthly meetings at the district, county workshops, & must keep up on all latest research * Principal meets monthly with Asst. Supt. of Ed. Services & monthly with Dir. of El. Ed. * Math Committee teachers receive training on the frameworks	* Training of teachers who were the first committee members of the cross role team during implementation produced qualified trainers in the district * Mentor became a trainer of trainers with the Lane County materials in problem solving * One mentor who can train others on the elementary math level * Several teachers were invited to volunteer on the cross role team for math which later developed into grade level committees	* Attended framework awareness sessions in Orange County * Reviewed research article related to math framework * Attended workshops * Various discussions at their meetings to discuss frameworks, etc.
Outcomes of the training	* Resource teacher provided demonstrations on new instructional strategies & assisted teachers with lesson plans & provided inservices * Principal got training on math curriculum & their responsibilities to implement the program	* Qualified trainers were produced who could train others	* Math Committee decided necessary staff developme for teachers & gave workshops to teachers * Math Committee gave workshops on strands of math framework that teachers needed most & developed a plan for staff developmen

Descriptor	Site A	Site L	Site K
Unique characteristics of district cross role team	* Draft for review the district learning goals * Recommend text to the Board	* Asst. Supt. chairs Math Committee, coordinates curriculum & staff development & oversees materials selection process	* None
Type of training to the district cross role team	* Administrative team gave initial training to Curriculum Review Team regarding frameworks * Attended conferences regarding frameworks	* District Curriculum Committee was trained in each of the frameworks * Mentors & other key leaders often presented training to the District Curriculum Committee * One of the authors of the state framework trained the District Math Committee * Some received training in textbook selection	* None
Outcomes of the training	* Cross role members updated staffs on the progress of the Curriculum Committee at early dismissal Monday meetings	* Math Committee presented information & training at staff meetings & site advisory committee meetings * District Curriculum Committee oversaw program implementation in a very general sense & attended more to district program, personnel, & fiscal concerns	* None

Descriptor	Site C	Site F	
Unique characteristics of district cross role team	* Their role is to align the frameworks with the district curriculum, text selection, assessment measures, & staff development	* The Textbook Adoption Committee developed a common understanding of scope of math program, scope of curriculum K-8, desired outcomes, & developed a common language to aid in their training & coaching at the sites	
Type of training to the district cross role team	* No formal training but worked through staff development opportunities with other staff	* Asst. Supt. provided training for familiarization of the framework, text selection process & procedures, & brought in trainers for the committee	
Outcomes of the training	* None	* Textbook Adoption Committee members served as experts to provide coaching for the classroom * They developed a common language to aid in their training & coaching at the sites	

Table 3 Responsibilities, Tasks, Functions of the District Cross-Role Teams

Descriptor	Site D	Site B	Site N
Responsibilities, tasks, functions, of the district cross-role teams	* Review the framework & make recommendations on how to best implement it in conjunction with the textbook adoption * Develop criteria for the textbook evaluation process	* SUM principals worked with Textbook Adoption Committee in the adoption process * Deputy Supt. directly supervised all implementation strategies * Asst. Supt., Elem. assumed primary responsibility for the implementation phase of the math program * Director of Curriculum had direct line supervision of 10 elementary schools in addition to the responsibility for the math curriculum * Director of Staff Training & Summer Schools had supervision of 10 elementary schools in addition to providing training programs for the principals & mentor teachers * Director of Comprehensive Ed had direct line supervision of 15 elementary schools, all Chapter I, & was responsible for 14 different programs to assist children with special needs * Director of SIP had direct line supervision of 15 elementary schools & monitored SIP programs * SUM principals were responsible for the development & presentation of inservice programs for 52 principals, developing a principal's monitoring system for pacing the math lessons at	* Committee compared 6 or 7 different sets of materia from the state matrix & selected 3 different series to be studied further * Identified any weak areas in the materials selected * Worked with program specialist to develop additional materials

		Site B Continued	
		each grade level, & for planning the week long principals' math institute during the summer, 1988, prior to the first year of implementation * Coordinator, Math & the 2 mentor teachers were responsible for the inservices & meetings with the 104 school representatives & planned math staff release days in December 1988.	

Descriptor	Site E	Site O	Site I
Responsibilities, tasks, functions, of the district cross-role teams	* Textbook selection * Articulation of program goals * Identification & training of mentor teachers * Alignment of district curriculum to state framework * Implementation of math program * Staff development & training	* Program development & adoption * Program implementation * Approving the implementation process * Developing a curriculum guide * Refinement & articulation of the program K-12 * Discuss teacher problems & needs * Inservice needs * Recommends district financial support for program implementation	* Textbook adoption * Write the new district standards for math to fit with the new math program * Staff in-service trainin to introduce & help implement the new textbo * Training sessions * Interview & select mentor * Read & determine awards of mini-grants for classroom instructional improvement projects like CTIIP * Discuss items of interest & concern * Provide community input * Coordination of programs * Give input, plan, & evaluate staff development program * Deliver staff development training in areas of expertise

Descriptor	Site J	Site G	Site H
Responsibilities, tasks, functions, of the district cross-role teams	* Training teachers in all areas of the instructional programs * Provide demonstrations on new instructional strategies & assist teachers with lesson plans * Give input to the principal so that local staff needs are dealt with as soon as possible * Determine staff needs & provide appropriate inservice * Implementation of the math program * Textbook adoption * Make presentations at inservices * Coaching teachers * Monitor & evaluate	* Decide the emphasis by grade level * Assist Math Mentor in staff development * Assist Math Mentor with writing of the curriculum * Inservices for teachers * Textbook selection * Develop implementation plan	* Determine focus for school year * Develop implementation plan * Coordinate implementation plan * Provide staff development * Develop curriculum guides and scope & sequence * Textbook adoption * Alignment of framework with curriculum goals, tests, & activities * Prepares suggested list of supplemental materials * Handle specific problems and provide ongoing assistance * Monitor & evaluate * Suggest making decisions regarding funding, expenses, etc.

Descriptor	Site A	Site L	Site K
Responsibilities, tasks, functions, of the district cross-role teams	* Presented district plan for curriculum review to teachers * Draft for review the district learning goals for math * Identify a minimum of specific objectives for each grade level in math which were aligned with the state frameworks * Textbook adoption * Recommend purchase of supplies & materials * Monitor & evaluate * Decisions regarding funding	* Was given the task of filling the gaps that were identified during the curriculum audit * Set training goals for the implementation * Led the process for selection of the basic & supplementary materials * Served as link between the school site & district level * Presented workshops on the new materials * Textbook adoption	* Serves as a needs assessment panel * Serves as a problem solving committee * Keeps communication open between district & schools

Descriptor	Site C	Site F	
Responsibilities, tasks, functions, of the district cross-role teams	* Manage math program implementation * Curriculum development * Staff development * Align state framework with district curriculum * Textbook selection * Assessment measures	* Developed common understandings of the math strands, the scope of the math curriculum K-8 * Developed desired student outcomes * Developed a common language to aid in their training & coaching at the sites * Met with grade level peers & discussed the activities, materials, resources, & student outcomes as seen by the classroom teacher * Provided peer coaching & demonstration lessons at the site * Prepared & presented materials * Textbook selection	

Table 4 Names of School Level Cross-Role Teams

Descriptor	Site D	Site B	Site N
Names of school level cross-role teams	* None	* School SIP Committee	* None
Team membership of school level cross-role teams	N/A	* Teachers * Parents * Community members * Principal	N/A
Selection of members of the school level cross-role teams	N/A	* Teachers volunteer * Principal confirms the committee assignments	N/A
Type of training to the school level cross-role teams	N/A	* Unknown	N/A
Responsibilities, tasks, functions, of the school level cross-role teams	N/A	* Monitor SIP program	N/A

Descriptor	Site E	Site O	Site I
Names of school level cross-role teams	* Mentor Teachers * Principal's Core Advisory Team * Professional Development Team	* School site cross role team	* School Site Council * Math SIP Committee
Team membership of school level cross-role teams	* Mentor teachers * Teachers * Principal * Trainers	* Principal * Teachers * Parents	* Principal * Certified staff members * Classified staff members * Parents * Interested volunteers
Selection of members of the school level cross-role teams	* Volunteer	* Teachers volunteer based on interest or principal requests them	* Selected from interested volunteers
Type of training to the school level cross-role teams	* Trained at Staff Development Center * Trained by L.A. County Office of Instruction * Trained by outside personnel	* Summer training sessions * Outside consultants	* SIP committee was trained in the quality criteria at a staff meeting for SIP
Responsibilities, tasks, functions, of the school level cross-role teams	* Served as an advisory of the principal * Shared ideas & strategies for implementation of the math program at the site level * Discussed current issues in math & curriculum * Train teachers in strategies	* Work on program implementation * Work on inservice needs * Teaming with other teachers	* Evaluate & plan as part of ongoing effort toward school improvement * Compared their site math program with the quality criteria to determine strengths & areas where they need to improve

Descriptor	Site J	Site G	Site H
Names of school level cross-role teams	* None	* None	* None
Team membership of school level cross-role teams	N/A	N/A	N/A
Selection of members of the school level cross-role teams	N/A	N/A	N/A
Type of training to the school level cross-role teams	N/A	N/A	N/A
Responsibilities, tasks, functions, of the school level cross-role teams	N/A	N/A	N/A

Descriptor	Site A	Site L	Site K
Names of school level cross-role teams	* None	* School Site Council	* None
Team membership of school level cross-role teams	N/A	* Teachers * Parents * Classified employees	N/A
Selection of members of the school level cross-role teams	N/A	* Nominated & elected by their peers	N/A
Type of training to the school level cross-role teams	N/A	* Principal & math mentor trained them in the key elements of the math framework	N/A
Responsibilities, tasks, functions of the school level cross-role teams	N/A	* Development, implementation, monitoring, & evaluation of the school plan	N/A

Descriptor	Site C	Site F	
Names of school level cross-role teams	* School Site Council	* None	
Team membership of school level cross-role teams	* Parents * Teachers * Administrators * Students	N/A	
Selection of members of the school level cross-role teams	* Voluntary	N/A	
Type of training to the school level cross-role teams	* No specific training	N/A	
Responsibilities, tasks, functions of the school level cross-role teams	* Bring information & direction back to the staff	N/A	

Table 5 Description of the Implementation Plan

Descriptor	Site D	Site B	Site N
Description of the implementation plan	* District developed a textbook adoption/ implementation process in conjunction with the math program * Plan included the following things: * review of the frameworks * criteria for textbook evaluation * piloting of textbook series * awareness inservice * selection of instructional materials * selection/role of school level teacher leaders * selection of focus schools * training teachers & aides at focus schools * implementation inservice * continued teacher leader training * principals inservice * The above process is coordinated through the Assistant Superintendent, Instructional Support Services & his staff	* District had a comprehensive implementation plan for math * District provided workshops prior to the opening of school during the 1988 fall * Stipends were paid & bonus materials were given to participants * Principals were provided with a week of training during the 1988 summer * Principals received concentrated instructions relative to the math program & observed at a year round demonstration school * School site representatives had intensive training during the 1988 spring & summer workshops in preparation as school site lead teachers	* Implementation proceeded according to the plan which had been developed 4-5 years ago when the district created a plan to increase reading achievement * Publishing company provided training to two teachers per elementary grade level to serve as grade level leaders * These leaders then helped plan an inservice for 300 teachers who received their teacher's edition for the text * Math Institutes were held in conjunction with summer school (week long, 5 hours a day) * A 4 hour inservice held for year round teachers * SUM principals organized an inservice for the principals regarding the materials & ideas for supervision * Grade level workshops were held & focused on grade level content * School reps met & reviewed content from the Math Institute & planned the inservice that would continue through the 1988 1989 school year * Inservice included monthly meetings at which 2 math reps from each school could meet & discuss math, SUM principals monthly meetings, special educati

Descriptor	Site D	Site B	Site N
			math meetings, grade level meetings, schedule of grade level meetings for substitutes * The new text adoption was to be phased in over a 2 year period * Assistant Superintendent for Elementary Schools was responsible for trying to understand the global concepts of the framework changes * Director of Staff Development coordinates the inservice plan * A mentor teacher has been assigned responsibility for each of the 6 grade levels

Descriptor	Site E	Site O	Site I
Description of the implementation plan	* There is an overall implementation plan called "Integration of Programs" * The plan is published yearly & delineates the focus of program change for the year it is published * The plan focuses the financial & human resources of the district on key areas of program change & identifies sequential planning & implementation effort for program improvement * Phase I of the plan is evaluation & planning & includes secondary math as one of the 6 areas of the curriculum to be highlighted * Phase II of the plan is implementation & addresses math in grades K-3 * Phase III of the plan is continuing implementation & focuses upon elements of instruction * The coordinator of the program at the district level is the Deputy Superintendent of Instruction * At the site level, the principal is the coordinator of the program	* No written district math implementation plan * District Math Coordinator has the responsibility for implementing the new math program * The math implementation is a 3 year process * The first year included working with the District Math Committee to align the District Math Curriculum with the State Math Framework, select a text, & provide up front training to teachers * The second year (this year) is a trouble shooting year to determine what problems teachers are having in implementing the new math program & working to articulate the math program in grades K-12. * The third year will consist of making any necessary adjustments & refinements * The implementation is not a formalized process but is an outline that is kept in the Math Coordinator's head	* No overall math implementation plan * District office seems to feel the program was implemented when textbooks were adopted & teachers were inserviced in their use and format * The key strategy for math implementation was determining & publishing the new academic standards which reflect the framewor * A Math Power summer workshop was held for the past 3 years which trained about 100 teachers in the strategies & content strands which was initiated, planned, & taught by the math resource teacher who was assisted by 3 other lead teachers * The Assistant Superintendent for elementary education is in charge of all elementary curriculum

Descriptor	Site J	Site G	Site H
Description of the implementation plan	* The district has an implementation plan for math * The summer project goals for 1988 are the following * revise, delete, & develop criterion referenced tests to correspond with the textbooks and the State Math Framework & revise part of the district math curriculum guide * review & rewrite the math guidelines for the district * evaluate the inservice needs of the district for the introduction of the new math textbooks * develop suggestions for implementation & necessary inservicing * The summer project goals for 1989 are the following: * explore the possibility of math mastery tests and/or a quick screening assessment test that can be used by teachers or resource teachers * Review & develop math worksheets for grade 3 & 6 CAP testing that will correspond with new test items/content * review & refine the inservice needs of the district & evaluate test data * review need for correlation of textbook pages with CRTs * SB 813 requirements	* No specific written implementation plan * The Assistant Superintendent states that the framework is the planning document of what is to be implemented because there is a consensus that teachers and administrators agree with the frameworks * During the 1986-1987 school year, the math mentor and the Assistant Superintendent made plans for the implementation which started with the development of a math binder which focused on problem solving and the number strand, but these plans along with all implementation were halted when the math mentor was not selected to be a mentor teacher during the 1987-1988 school year * Because the tests are changing, math teachers will be taught how to teach to the test and the scope and sequence will be revised to comply with the frameworks * There are no longer any plans to follow through on the number strands and the plans for math will continue to be what can be accomplished during the span of one school year rather than a period of years due to the instability of the math	* There is a written overall implementation plan for the district for math * The first phase of the plan is concerned with: * constructing specific grade level objectives/strands * match with CTBS, CAP, SI Document and current grade level objectives * report back to principals/teachers regarding awareness * grade level meeting components * continue awareness with teachers, principals, & the Board * The second phase of the plan is concerned with: * information on the new framework requirements * complete a working draft of the math curriculum * complete the textbook selection process * staff training regarding the math strands & teaching methods * provide principals with ways of assessing quality math lessons & instructional strategies * heighten parent awareness of the math frameworks * pilot models of student assessment * The third phase of the plan includes: * present first draft of curriculum to the Board

Descriptors	Site J	Site G	Site H
	* The summer project goals for 1990 are the following: * review & revise the first half of the district math curriculum guide * review & refine the inservice needs of the district in implementing the State Math Framework * The school level plans must include objectives in math that include problem solving & higher level thinking skills as well as the number of inservices the school will have to assist teachers in these objectives	mentor's position in the district	for approval * principal preparation for implementing a quality math program * textbooks available in the classrooms * staff training in curriculum, strategies, & the textbooks * continue to pilot models of student assessment * continue work with parents * The last phase of the plan includes: * gathering feedback from the staff regarding the effectiveness of the curriculum & textbooks * making necessary changes & filling in gaps where materials are needed * completing workshops in the remaining math strands * continue to monitor assessment data

Descriptor	Site A	Site L	Site K
Description of the implementation plan	* The implementation plan was conceived in two parts. The first part was district orchestrated & designed to formally adopt the curriculum as a Board Administrative Regulation which required a long period of awareness for the Board, administrators, & teachers, training of key cross role team members, development of Board goals & student expectations, adoption of state textbooks, & formal Board adoption. The idea was to formally adopt the new program & then mandate it down to the sites. * The second part of the implementation plan was to charge site principals to implement the program at their school sites	* No written district implementation plan * There is an established process * After a curriculum audit by the board and administration, the district used the Math Committee to lead implementation of the program * As the first step, the committee planned & led the materials selection process & follow up training included peer coaching & demonstration lessons * The Asst. Supt. acted as the chair of the Math Committee and coordinated the implementation of the program * While not in written form, the plan was clear to the teaching staff * The school level plan included specific implementation activities & timelines in each goal area. When complete, the 1989 plan would include a planning, assessment, & evaluation component that would include more detailed planning strategies	* No overall implementation plan at the district or the school * There is a direction. It is very loose, & there are no timelines

Descriptor	Site C	Site F	
Description of the implementation plan	* No plan for math at the district level * The school site has a school plan checklist of the key components of the math program * A course of study was developed which included grade level expectancies, instructional strategies with suggested activities related to the use of manipulatives & included supportive resources for instruction in math	* No formal implementation plan available other than the frameworks as used by the Asst. Supt. & his own perception of what the curriculum program should be * The SIP plans at the sites included activities for implementing the math program & they were limited in scope * The school plan included needs assessment, instructional improvement, goals, & evaluation criteria * The Textbook Adoption Committee made all major decisions regarding curriculum & text adoption, activities, etc.	

Table 6 Programs and Materials

Descriptor	Site D	Site B	Site N
Programs & materials	* Silver Burdett (K) * Holt (1-6) * Math Their Way * Explorations by Addison Wesley (supplement at K-2 levels) * Computer software	* Real Math (text from Open Court; 1-6 grades) * Explorations I (text from Addison Wesley; K) * Manipulatives * Calculators * Enrichment materials * Response cubes * Number wheel response cards * Number cubes * Play money * Desk number lines * AIMS * Math Their Way * Computers	* Open Court * McMillian (for 1988-89 instructional year) * AIMS * Manipulatives * Addison Wesley Explorations I (K) * Math Their Way (supplement for K) * Mental Math Activities * Teachers' own games & materials * Calculators

Descriptor	Site E	Site O	Site I
Programs & materials	* Addison Wesley text * AIMS * Math Their Way * Multilinks * Pattern blocks * Geoboards	* Holt Mathematics Unlimited series * Calculators * Computers * Math Their Way * Family Math	* Math Their Way (K) * Math lab with manipulatives * Family Math * Addison Wesley (1-5) * Randall Charles Problem Solving supplement * Explorations * Math Sponges (Leigh) Childs * Problem of the Week & Super Problem (D. Seymour Publisher) * AIMS * Base Ten Materials (M. Laycock) * Calculators * Mental math problems * Geoboards * Cuisenaire * Unifex cubes * Pattern blocks * Dominoes * Number tiles * Bean sticks * Cal Math Project materials * Solutions (Marilyn Burns) * Developing Number Concepts (K. Richardson) * Marcy Cook materials * Computer software

Descriptor	Site J	Site G	Site H
Programs & materials	* Math Their Way (K) * Math videos * Silver Burdett (K-6) * Ginn (K-6) * Calculators	* Math Their Way * Scott Foresman * Family Math * AIMS * Problem Solving in Math * Northern California Math Project * Bay Area Math Project * Base Ten Math * The Arithmetic Primer * Problem-Solving Experiences in Math by Randy Charles (Addison Wesley) * TOPS CARDS by Dale Seymour Publisher * Mortenson Fractions kits * Computers	* Silver Burdett text (1-6) * Math Their Way (K) * AIMS * Manipulatives * Calculators * Computers * Materials for weighing & measuring * Geometric shapes & forms * Family Math

Descriptor	Site A	Site L	Site K
Programs & materials	* Addison Wesley text * Marcy Cook Math * Math Their Way * Calculators * Computers * AIMS	* Scott Foresman (1-5) * Math Their Way * MATHTEQ * Calculators * Computers * Box It & Bag It * Mathematics a Way of Thinking	* Math Their Way * Exploration Mathematics series (K-2) * Scott Foresman (3-5) * Manipulatives * Family Math * AIMS * Calculators * Computers & software

Descriptor	Site C	Site F	
Programs & materials	* Scott Foresman * Math Their Way * Family Math * AIMS * Real Math * Super Duper Story Problems * Calculators * Manipulatives * Think Lab (computers) & software * Marcy Cook materials * Pattern blocks * Multi links * Tiles	* Math Their Way * AIMS * Heath Mathematics (2-6) * Explorations 1 & 2 (K-1 supplement) * Manipulatives * Computers & software * Counters * Pattern blocks * Cuisinaire rods * Scales * Calculators * Math kits * Films & filmstrips	

Table 7 Initial Content, Skills, Awareness Training

Descriptor	Site D	Site B	Site N
Initial Content, skills, awareness training	* District provided awareness inservice during first year of each of the text adoption cycles * School level leaders were selected and attended additional inservice programs in order to assist colleagues in implementing * During the second year of each cycle, a pre-service was provided teachers with an initial implementation release day * District & principal are planning to continue inservice activities to insure program continuation in content * District is offering 150 workshops during fall & winter of 1988-89	* Publishing company provided consultants for a 1 day session to train 2 teachers per grade level to serve as grade level leaders * Grade level leaders helped plan meetings that were attended by over 300 teachers who participated in 1 hour inservice * Math Institute held for K-3 and 4-6 grade teachers in conjunction with summer schools (105 teachers attended week long institute) & one primary & one intermediate teacher became trained as a school rep who would serve as a resource to their staff & administrator in math * During the week of the institute, afternoon sessions were available to any interested teachers * 75 teachers & substitutes took advantage of the "Open Wednesday" session by observing the Institute demonstration teachers who continued to use the series * 4 hour inservice given for the 4 year-round schools' primary teachers * SUM principals organized inservice for all elementary principals * 2 elementary math mentors designated as math facilitators & released 40% of the year to focus on math curriculum district wide	* Even before the adoption began, a strong staff development program had been instituted to improve the teaching of math * Math Specialist had instituted idea of using teachers to teach teachers by promoting MICA MATH & had hired teachers to teach classroom management skills as well as to develop curriculum expertise * *Math Our Way* workshops were offered once a month the first year & 2 a month the following year * First training for *Open Court* adoption was a workshop given for both math reps & teachers & then a 5 day summer workshop was given * Monthly grade level meetings are held & are conducted by the mentors & 6th grade teachers * 300 representatives from 51 elementary schools meet each month with the math mentors to give input that is used to plan monthly teacher workshops * Mentor teachers visited primary teachers in their classrooms & conducted demonstration lessons

Descriptor	Site D	Site B	Site N
		worked with grade level leaders to hold 5, 4 hour workshops focused on a particular grade level content * Math training focused on all areas at the same time * Math training had been sequential beginning with instructional strategies, succeeded by the use of calculators, math for the family & integrating math with literature & science * Training coincided with textbook adoption cycle	

Descriptor	Site E	Site O	Site I
Initial content, skills, awareness training	* New Teacher Orientation * Math Make & Take * Mentor meetings * Sheltered & cooperative learning * AIM * Peer coaching * Tactics for Thinking * ETN Mathematics Content Special * Math A * Training of trainers * Elements of instruction * Training to increase staff skills at implementing the new math program involves a series of workshops which provides participants with the district Mathematics Course of Study & other materials * The 3 types of these workshops are the following: * one chapter from the text correlating the Resource Book, Teacher's Edition, & activities * workshops designed for teachers who have had little or no training in the use of math manipulatives & hands-on experiences teaching the 7 strands using manipulatives * workshops designed to move from the concrete to the abstract levels through the 7 strands * Training is ongoing & is cycled sequentially (workshops in one subject area are repeated throughout the year)	* Generic in-service training program that the district has had in place for over a decade serves as a vehicle for initial content & skill training * The basic strands for the District Professional Development Service (PDS) includes the following: * the dynamics of behavior management, classroom organization, & time management * the lesson design models of clinical teaching, higher-order thinking skills, & cooperative learning * the follow-up of clinical supervision, peer coaching, & home (site) teams * Beginning teachers are provided with a 1 week training session * Veteran teachers are trained as new components are added * A second part of initial training included a bi-weekly training session for principals in which the math coordinator kept the principals updated on the progress of the Math Curriculum Committee & brought in math consultants who made presentations on curriculum & pedagogy * Math consultants were brought in for all day teacher institute days	* Training to increase staff's awareness came initially from teacher attendance at national, state, & county math conferences * District training began in 1986 when the district's professional program expanded from clinical teaching & supervison to include a series on Math Power & one on cooperative learning * After each clinical teaching session, participants were asked to participate in a peer coaching activity to observe & conference with a peer on their lessons * A series of 6 meetings also addressed Writing Across the Curriculum which included math & is offered twice a year * Specific training was done after math texts arrived & staff in-services were held on minimum days * All principals were trained in clinical supervision, situational leadership, & decision making * Content areas are sometimes addressed at principal meetings * Math training is not necessarily cycled

Descriptor	Site E	Site O	Site I
	* Training for principals includes the following: * school improvement * the Chapter I - principal meetings * the ETN reform leadership series * clinical supervision	to address staff concerns & inservice needs * Math textbook adoption was addressed as teachers were provided inservice on how to use the teacher's edition of the text * Video tapes on cooperative learning & using the text were made available to teachers * Outside consultants were brought in to address teacher concerns * Principal served as a trainer of trainers by providing training to individual staff members on the use of manipulatives, calculators, & computers * The district has not had a sequentially cycled training program, but the new program will be cycled to correspond with the state frameworks cycle & will include pedagogical, curriculum content, & teaching strategy training	sequentially because training in other content areas may occur simultaneously & teachers attend what they are interested in & sessions are filled on a first come-first served basis * At the initial textbook training, the message was given that regular teacher input sessions would be established * Many teachers at the site levels work together in grade levels to plan, share materials & ideas, & solve common problems

Descriptor	Site J	Site G	Site H
Initial content, skills, awareness training	* Principals received training on the new math framework at the monthly meetings with the Asst. Supt. & Dir. of Elem. Ed. * Resource teachers received training at their monthly meetings with the Dir. of Elem. Ed & the district math specialist * All teachers received an introductory workshop on the new math textbook * After the initial meeting, inservices were broken down by need & interest of individuals and/or groups of teachers and were conducted at the local school site & included topics on calculators, problem solving, & mental math * Teacher's specific interest is identified at the site & the resource teacher must meet individual needs * District has 7 scheduled minimum days for staff development & the first minimum day was devoted to math this year * All teachers received training on the new math curriculum guide * All kindergarten teachers were required to attend 8 meetings on *Math Their Way* * All teachers received background information on the new framework * District has sent teachers	* This year all grade level meetings for math are mandated for teachers, but last year they were not mandated * All teachers new to the district must attend a 2 day orientation session which includes initial training in the math curriculum * There is also a voluntary inservice training called the August Institute which is a 1 day inservice provided by the district's own staff * The district level administrators were given initial training in the content of the frameworks & attended state conducted meetings with teachers & attended local meetings conducted by the Asst. Supt. of Instruction * Mentor teachers provided all of the initial content, skill, & awareness training to the teachers	* Math framework got to the teachers through the Orange County Math Council * Math Committee shared ideas from all the workshops they had attended & then set up a plan for providing math awareness to each school * Each school was hit with a math awareness session in the fall * After initial awareness, teachers filled out a needs assessment & additional sessions were given by the curriculum specialist, mentors, or Math Committee * P.T.A. Council & other P.T.A.'s were also given framework awareness sessions * Framework awareness was also done at the principals' meetings * Framework awareness was done at a School Board meeting * Inservices were held by grade level to address the strands teachers were having the most trouble with * Extensive training has been done in cooperative learning * Principals have received training in coaching teachers & how to observe the new teaching

Descriptor	Site J	Site G	Site H
	to be trained on lesson design by Madeline Hunter and re-trained teachers		strategies * Teachers were sent to conferences in the Orange County area & were provided with outside consultants like Marcy Cook * Mentor teachers gave demonstration lessons to teachers who were having difficulty * Not all 7 strands were addressed at inservices, but they were all introduced at the initial framework awareness session

Descriptor	Site A	Site L	Site K
Initial content, skills, awareness training	* Mondays have been designated staff development days & the staff development normally includes each month, one day for grade level sharing, one day for inservice & staff development training, one day for SIP component meetings, & one day for teacher preparation time & conferencing. Lots of time is used for teachers sharing & developing activity packets for classroom use & during these meetings awareness & training on the framework have been covered * The Chapter I teacher at the school provides specific math framework activities training * All teachers who attend out of district conferences & workshops are asked to share * Principal invites district office personnel, department execs, & other mentor teachers for sharing * The principal is credentialed as a teacher trainer in clinical teaching & has trained the staff in effective teaching techniques of clinical teaching & also conducts training sessions in clinical supervision for	* Awareness training for implementation of the new math curriculum started in 1978 when two kindergarten teachers heard about Math Their Way at a kindergarten conference. They attended a 1 hour overview of the program & then a week long summer session for skills training after which they returned to the site in the fall & infused other staff members. They provided informal awareness training to other teachers * Teacher-initiated training was seen repeatedly in other programs such as MATHTEQ, Family Math, & Mathematics a Way of Thinking * At the district level, the curriculum audit was the first step in awareness training for some administrators & for the school board * The District Curriculum Council was trained by a consultant on the strands and emphases of the math framework * Site administrators also attended annual Program Quality Review training updates sponsored by the state which kept them abreast of the state quality indicators * Staff meetings & district	* Teachers were introduced to the math framework informally at a faculty meeting by a teacher who was inserviced at a county meeting * New teachers were inserviced in the grade-level standards & they reviewed expectations in math * No training provided for the implementation of the program for teachers or principals * All subject matter is trained at the same time & there is no sequential cycling * District encourages improvement & offers assistance informally

Descriptor	Site A	Site L	Site K
	the county & the district	wide, mandatory workshops during minimum days provided awareness training for all teachers * Prior to textbook adoption, mentors presented awareness training in the strands & emphases of the frameworks at a district wide minimum day * The principal and the math mentor presented a more detailed overview of the framework & gave each teacher a copy of the document * All teachers participated in various types of skill training * Mentors reinforced the various strands from the framework, demonstrating lessons from each strand * Site mentors provided follow-up training & coaching * Mentors presented workshops in cooperative learning, use of manipulatives, problem solving, & critical thinking * Teachers attended various conferences * Teachers trained their own teachers to be Family Math presenters * Publishers were brought back for a full day of training * Training sequence was designed by teacher effort	

Descriptor	Site C	Site F	
Initial content, skills, awareness training	* Teacher training for the new math program has been initiated at the site level by the principal more than at the central office, committee level * Teachers attended workshops for Marcy Cook Activities, Math Their Way, & cooperative learning * The textbook publishing company has worked with the staff on activities & textbook use * The principal invites math specialists & mentors to the school to model teaching activities * The Math Curriculum Committee worked with an outside consultant to align the curriculum with the framework & they in turn returned to their sites & conducted formal meetings to teach the staff about the new curriculum * The Curriculum Committee handed out the Mathematics Curriculum with content, outcomes, activities, & resources for each grade level during the first year * During the second year, a textbook was adopted & staff development sessions trained all staff	* Teachers are presently using the basal text as a guide for the mathematics program & are supplementing it with training from AIMS, Bloom's taxonomy, HOTS, critical thinking skills, and cooperative learning training & assertive discipline * Teachers were trained in clinical teaching (Madeline Hunter model) & problem-solving techniques * Committee experts provide coaching for the classroom * Mentors provide coaching & demonstration lessons as requested * Teachers participated in a math framework orientation workshop in the morning followed by another critical thinking workshop in the afternoon	

Table 8 Administrative Commitment, Pressure, and Monitoring

Descriptor	Site D	Site B	Site N
Administrative commitment, pressure, & monitoring	* District personnel & school principal are providing follow-up activities for inservice * Mentor program lacks coordination & has not been fully utilized * Principal has been exposed to CBAM & is designing inservice program in conjunction with another elementary school * Asst. Supt. & principal are very closely monitoring the implementation process	* Administrators attended many workshops & are extremely knowledgeable * Administrators attend program workshops * Board of Ed. allocated additional funds to purchase manipulatives & calculators ($378,000) & to provide training for 104 math reps * Cross-role teams, administrators & principals all insist on lots of training * Administrators attend ongoing training sessions * Principals were required to participate as coaches for ATC & obtain resources for teachers such as release time, training & materials * Principals, etc. received workshops prior to the teachers & were very knowledgeable & are still receiving training * There is presently a lot of sharing, coaching, & mentoring * SUM principals serve as support program facilitators * Adequate support services were provided by administrators to the teachers & teachers were closely monitored * Principal made sure teachers followed a timeline so that entire text was covered during the school year * Lots of coaching by prin-	* Mandatory attendance at workshops for principals regarding adoption * Math specialist provides 30 minute demonstrations each month for principals to attend * Principal attended ATC meetings * SIP money was combined with PTA money to purchase AIMS manipulatives for kindergarten * Money is being used from SIP budget to help buy overhead projectors for Open Court that are needed * 2 years worth of curriculum money has been used to fund the books & manipulatives * Board supported the Adoption Committee's recommendation & voted against the vocal group of teachers who opposed selection of Open Court * 15 principals met on a regular basis to identify any additional support needed to make the adoption work * District Math Specialist has worked with the Calif. State Dept. of Ed. * The Title I/SIP/preparation teacher is freed up for 1 hour each week to identify & order materials * Teachers received workshops in Math Their Way & half of staff development for

Descriptor	Site D	Site B	Site N
		cipals, buddy system is being used * Teachers were initially concerned because the program required new skills on their part, but workshops were provided * There is both mandatory & voluntary staff development * Teachers felt pressured to use the program & mentors were always available * Workshops, monitoring by principal, training in the ATC math module included pressure & monitoring necessary for implementation * There were 3 way conferences & math lessons were observed as part of teachers' evaluation * LoU & SoC were first being introduced but no information regarding the outcome, but principals & administrators determine the concerns of staff * Cross role members & principal determine the extent of implementation * Program was implemented with consistency across the district with little adaptation to fit local needs	the past 2 years has gone into supporting math adoption * Math Specialist encouraged teachers to volunteer for Adoption Committee & mentors have received special training * Many teachers expressed apprehension over learning how to use the Open Court materials * Mandatory meeting regarding introduction to Open Court * Goals are spelled out in a booklet that is given to parents * Principals "drop in" to determine the concerns of teachers * Principals do walk throughs to help determine the extent of implementation

Descriptor	Site E	Site O	Site I
Administrative commitment, pressure, & monitoring	* Extremely extensive staff development for administrators & teachers * Principal models lessons * Principal attended initial district workshops for implementation * Principal allocated necessary resources * Principal provides mentors to assist teachers & schedules peer observations * Principal makes daily classroom visits * Principal has received extensive training in the program as is perceived as being a good resource but not an expert * Principal spends time in classrooms & workshops working with teachers & providing assistance such as teaching strategies, lesson delivery, & classroom organization * Administrators receive extensive training & so do teachers since pressure comes from district to principal to teachers * District's "Integration of Program" serves as timeline * Peer coaching & mentors are used * Teachers must attend monthly staff development * Teachers at K-3 level felt the most pressure & there is pressure from top-down and bottom-up * Both mandatory & voluntary staff development	* Math resource teachers & principal received training at Cal State University at Bakersfield & Fresno Pacific College in implementing the framework * Administrators attend district workshops & also ones outside the district * There is district funding for upfront & ongoing staff development * Principal spent $2,500 of discretionary funds on math content or math teaching strategy inservice (his own inservice plan) * Principal got a second Masters degree in curriculum * Math Coordinator & Coordinator of Instruction are seen as the experts * Staff development has occurred in calculators, cooperative learning, & manipulatives * This is only the second year for the mentor program * Principal rewrote the school SIP plan to identify weaknesses in the school's math program * Asst. Supt. of Instruction provided a timeline with expectations * Primary teacher acts as the math resource teacher and peer coach for the school * Teachers feel pressured to get the program implemented but are going through the text page by page because they lack the confidence	* Asst. Supt. has consistently promoted critical and higher level thinking skills & has promoted attendance at Tactics for Thinking & GATE conferences * Appearance at training sessions * Mentor, lottery & SIP funds provided additional staff development, teacher release time for inservice, & manipulatives * Calif. Math Project supported 2 sites over a 3 year period * Teachers are given release time to present at local, state, & national math conferences * Mentors as Presenters training allowed mentor teachers to work together to learn new skills of presenting * Asst. Supt. gives demonstrations * Stipends are paid to teachers to attend Math Power & Cal Math workshops during the summer * Principal & PTA provide teachers with 1 hour 15 minutes monthly to share ideas & smooth out rough spots of implementation * Principal allows release time so teachers can meet in support groups * California Math Leadership Project was decided

Descriptor	Site E	Site O	Site I
	* Attendance at staff development is high & some are held on Saturdays * Principal determines concerns of staff through daily classroom visits & by talking to teachers	regarding mastery of the teaching strategies needed * Beginning teachers must participate in a one week training course on target teaching, etc. * There are a number of teachers who are math advocates & apply pressure from the bottom-up & a core group of teachers push to get teachers trained so program can be implemented * Math Coordinator has increased the amount of time he spends coordinating the math program: 20% GATE & 80% coordinating the program * Principal informally determines the concerns of staff & most teacher concerns are voiced at Math Committee meetings * Asst. Supt. is planning to implement a formal monitoring system such as CBAM * Principal spends 1 1/2 hours 3 times a week observing, monitoring, & assisting in the classroom * Math Coordinator visits school sites with principals	by 92% of the school staff * Principal says school has 3 years to implement the program & not to worry about it * Mentors give staff development & essentially that's the implementation * Teachers feel pressured to get the program in place because of the Cal Math Project & fear they haven't yet mastered the strategies * $16,000 was alotted for professional development * A committee of teachers analyzes assessments & orchestrates programs & assures that every member is actively involved in professional development * Using state lottery funds, the district awarded grants to teachers to implement innovative program ideas within the classroom * Surveys are conducted to determine individual needs * Staff meetings address concerns & teachers meet in support groups * Principal has a 3 year commitment to the Cal Math Project & is taking the training, reading & observing regularly to be informed of program progress & problems & also does walk throughs & observations

Descriptor	Site J	Site G	Site H
Administrative commitment, pressure, & monitoring	* Principals are required to attend all workshops on curriculum that teachers also attend * There is budget allocation & staff development & all necessary materials, texts, etc. * $80,000 was spenct to train teachers on lesson design & re-train teachers * Resource teacher is responsible for the math program & each content area has a guide book * Release time is provided during school hours so that teachers can attend training & videos of good math lessons have been purchased * Principal is perceived as a good resource while the Math Coordinator is the expert * New teachers meet with school site resource teacher monthly & are also paired with experienced teachers * Principal makes frequent classroom visits * There is a timeline for adoption & implementation * Math Coordinator coaches & does demonstration lessons * Parents are involved in awards ceremonies & put pressure on teachers that students must succeed * Principal provides teachers with resource teacher,	* Principal was involved in Project Giant Step during the 70s & brought Math Their Way to the district * Principal does not participate in district level activities as much as other administrators in the district. Most principals don't attend training sessions * $9,000 for staff development this year * SIP funds will be used for math if they get the money * PTA gave $4,000 for manipulatives * Math mentor coordinates the writing of the math curriculum & coordinating math inservices * Math mentor is the expert in the district & has the major role of running the program * Bottom-up pressure in this district * Teachers at grade level committee assist teachers * Actions of more skilled & enthusiastic teachers appear to create "self pressure" to strive towards excellence * Math Mentor runs the whole show & schedules lots of inservices * Principal had 2-3 meetings last year to talk about math & discuss teachers' concerns	* Principal makes math part of teacher evaluation for the year & also part of monthly goals * Asst. Supt. & principal are visible at training sessions * P.T.A. money was used for math materials * 50,000 spent on manipulatives & $10,000 for subs so teachers could attend staff development * Teachers & principals discuss problems with mentors & they provide staff development * Principal insists on implementation by making it part of the school plan * Principal gives general expectations for end of the year goals * High teacher motivation instead of a lot of pressure * Mandatory staff development on restructured days & some other sessions are voluntary * Asst. Supt. & principal visit classrooms * Principal & Math Committee determine concerns of teachers & so do mentors

Descriptor	Site J	Site G	Site H
	released time for training sessions, cross age totors, instructional aides, & parent volunteers * Principals & district office administrators visit schools * Principal has bulletin to keep teachers up to date on math * Principal has open door policy & staff express their concerns * Principal does walk throughs & observes lessons * Every teacher & administrator is required to follow the curriculum guide & it's monitored by the district office personnel & school site administrator	* Principals determines extent of implementation by daily walk throughs, talking to teachers, monitoring CAP & CAT test scores & observing weekly * The Science Specialists, the Math Mentor, & the principal expect teachers to implement required areas & use hands-on experiences with materials & manipulatives	

Descriptor	Site A	Site L	Site K
Administrative commitment, pressure, & monitoring	* Principal gives training sessions in clinical teaching * $21,611 goes directly to school site primary instruction program for math & science * School receives $50/ADA or $29,150 from lottery funds to implement the program * Principals are held accountable for student achievement on the CTBS as part of their evaluation by the Supt. * Principals must file written reports to the Supt. twice a month regarding their progress toward the goal * Principal attends training sessions * Principal holds teachers accountable in the teacher evaluation process (goal is 1 year's growth on CTBS for each child) * Lots of staff development * Supt. & Asst. Supt. make frequent classroom visits * Yearly goals are determined but unknown about exact time * Mentors assist mostly beginning teachers * Mandatory & voluntary staff development * Principals have decentralized budget to attend whatever conference or workshop they feel is needed * Principal sends home a weekly newsletter	* Principal participated in the overview of the frame work provided for the administrative staff & attended Program Quality Review update each year & participated in the ACSA Curriculum Leadership Academy * Mentor attended state sponsored meetings to review approved program & bring it back to the school * Principal presented & attended workshops * Principal gave each teacher $100 for math manipulatives * School Site Council agendas addressed the new math programs & release time was provided for confernece attendance, demonstration lessons, & peer coaching * Principal is knowledgeable in key concepts, thematic emphases, & instructional strategies but is considered a good resource, not an expert * Teachers were sent for full days of staff development, were sent to conferences, consultants were hired, mentor program, ongoing training in MATHTEQ & Family Math * Principal trained the staff in key elements of each framework, had staff meetings focused on curriculum issues, allocated	* Administrators do not attend training sessions * Lottery funds for in-service, hiring of external trainers, & the purchasing of manipulatives * Teachers do not perceive principal as an expert * Principal allows teachers to give mini-lessons at faculty meetings in new math strategies * Principal provides release time for peer observation & coaching * Principal reviews mandated trimester plans written by the teachers & suggests new math alternatives to lessons being reviewed if needed * Teachers perceive the principal as a dictator and being unduly critical * Teachers do peer observations & team teaching * Teachers feel changes the principal wants them to make are too uncomfortable within the timelines & they don't know how to do it * Teachers feel pressured to change too many areas too quickly * On site staff development programs are not yet provided * Principal believes high test scores & good quality review are important & indicate a good program

Descriptor	Site A	Site L	Site K
	* Principal determines the concerns of staff through informal discussions	resources for training & materials & planning of activities focused on math, selected math as one of two areas for in depth review of 1989 PQR, & asked teachers to address one of their annual goals to math * Timelines are in School Site Plan * Mentors greatly assist * Teachers initiated the math program 10 years ago * Mandatory workshops during minimum days * Very professional teachers who started the math program 10 years ago & who put pressure on themselves * Principal **determines** concerns informally & also gives out questionnaires regarding their needs * Many parts of the framework were already in place due to the teachers	* Principal monitors informally & also through the trimester plans * No monitoring from the district

Descriptor	Site C	Site F	
Administrative commitment, pressure, & monitoring	* Principal knows a lot about math & is excited about it * P.T.A. funds & school budget allocate funds for necessary resources * Board gave $20,000 for summer work on math & science * Little pressure applied by district as it focuses is turning to other areas * No particular specialists at district level who are perceived by teachers as being an expert * Central office pressure & monitoring include adhering to the framework & following grade level expectancies & following the Pacing Chart * Board decides staff development & committee decides how * Very little pressure * Principal sends out newsletter keeping parents advised of what is going on in math * There is a process in place for monitoring needs at the site level, but the committee hasn't yet reached that point * Principal visits classrooms & monitors	* Principal provides resources, training, & materials toward achieving the goals * Lottery funds are used * District provides training, release time for curriculum development, workshops, & materials for sites * Principal visits classrooms & Asst. Supt. meets with principal to discuss implementation * Principal is believed to be a resource, not an expert * SIP plan gives timeline with expectations * Mentors & committee members discuss program with teachers & what needs to be done * Inservices are mandatory * Principal provides coaching, feedback, supervision, & evaluation of teachers to assure that goals are implemented * Principal does walk throughs, evaluations, & gets resources for teachers	

Table 9 Extent of Latitude Given by District

Descriptor	Site D	Site B	Site N
Extent of latitude given by district	* Asst. Supt. is monitoring the implementation process	* No latitude given	* There is a district plan to get teachers to use Open Court
Extent of latitude given by school	* Principal is monitoring the implementation process	* No latitude given	* Teachers attend workshops regarding Open Court & mentors give workshops to show teachers how to use it
Reasons for latitude	* Monitoring by district & school	* District didn't allow it	* Open Court is just being used this year & it's very new to the teachers
vidence of idelity of istrict	* Asst. Supt. is monitoring * Staff development is being used to inform teachers	* There is little adaptation to fit local needs	* Teachers in district participate in workshops

Descriptor	Site E	Site O	Site I
Extent of latitude given by district	* District puts pressure on teachers & principal to attend staff development in order to learn about implementing the math program. * No latitude is given to address special needs of limited English speaking	* All teachers must follow district curriculum in all content areas & use the text	* Teachers are allowed to make decisions for themselves
Extent of latitude given by school	* Principal monitors closely because of pressure from the district * No latitude given to address special needs of limited English speaking	* Principal is advocate of district goals	* Teachers are allowed to make decisions for themselves * The degree of adaptation was high to accommodate the wide variety of teaching abilities & time constraints
Reasons for latitude	* District administration believes in implementing math program as determined by the frameworks	* All teachers are required to use district curriculum & text, but there is 85% staff turnover at the schools & they're trying to educate all teachers in skills	* Wide variety of teaching abilities & time constraints
Evidence of fidelity of district	* Program looks much the same as it's supposed to according to the frameworks	* Must use district curriculum & text & attend staff development	* Most teachers are settling for going through the text rather than planning hands-on activities for real problem solving & teaching for understanding

Descriptor	Site J	Site G	Site H
Extent of latitude given by district	* District requires teachers to follow math curriculum as stated in the guide	* Supt. insists that teachers & administrators got together & decided what would be done to insure uniformity throughout the district--all schools are to be the same	* District says the teachers must stick to the framework & that the state determines the district vision & goal
Extent of latitude given by school	* Teachers must follow math curriculum as stated in the guide * Differences in the classroom are due to teaching experience & ability of the teachers	* No latitude given to the schools * All must follow required problem solving strategy for math--same for all schools in the district	* No latitude. Teachers must follow the math framework
easons for latitude	* District requirements	* Supt. wanted one program for all schools	* Pressure from the Supt.
vidence of idelity of istrict	* District gives lots of inservices to train teachers the same * Administration monitors implementation	* All schools used problem solving for all schools--all schools the same	* Experienced teachers in the district affected some of the fidelity in the district

Descriptor	Site A	Site L	Site K
Extent of latitude given by district	* Great latitude in implementation of the program	* Many of the framework elements had already been elemented for a long time	* Teachers who are willing to change attend inservices while others don't
Extent of latitude given by school	* Great latitude allowed in implementation of the program	* Teachers had already been doing everything for years	* Inservices are not mandatory, so teachers do as they want
Reasons for latitude	* Buy-in of teachers * Principal is a cheerleader & lends support & assistance * Teachers share & encourage each other	* Self-initiated teachers * Teachers have been doing everything for years already	* Inservices are voluntary
Evidence of fidelity of district	* No pressure for fidelity * Some are teaching a structured planned approach	* Teachers determine the fidelity	* Each school differs

Descriptor	Site C	Site F	
Extent of latitude given by district	* District provides much less latitude in how the program was implemented at the site level	* Lot of latitude given by district	
Extent of latitude given by school	* Little latitude allowed * Principals insists that teachers adhere to frameworks, curriculum guide, & pacing chart	* Teachers may vary to meet the needs of students	
Reasons for latitude	* Principal & district monitor what's happening	* Teachers are aware of skills required of students in the testing programs & these have become the initial parameters for the teachers	
Evidence of fidelity of district	* Few adaptations allowed by district	* Text provides scope & sequence with chapters identified * Committee is in process of developing critical units for each & aligning the curriculum to the framework, CAP, & CAT	

Table 10 Evidence of Fidelity of School

Descriptor	Site D	Site B	Site N
Evidence of fidelity of school	* Principal plans staff development	* Lot of fidelity--little adaptation to fit local needs was allowed	* Teachers in district participate in workshops
Reasons for fidelity	* Staff development, SoC & LoU are being used by the principals	* District determined	* Brand new program & teachers are just learning how to use Open Court
Results of having high (or low) latitude/ fidelity	* Moderate latitude & fidelity in the district	* Program was implemented with consistency across the district * District had a transient student population whose adjustment to a new school was enhanced by the consistent pacing & management of the program throughout the district	* Teachers are in beginning stages of using Open Court

Descriptor	Site E	Site O	Site I
Evidence of fidelity of school	* Principal's daily classroom visits keep the teachers in line	* Teachers must use district curriculum & text & attend staff development	* Most teachers are settling for going through the text rather than planning hands-on activities for real problem-solving & teaching for understanding
Reasons for fidelity	* District insists on following frameworks as closely as possible & all staff development is geared to teacher training for that	* Commitment of superintendent on down to stick to the frameworks & get staff development so you can * Teachers feel pressured to do it	* Teachers did what they knew & could handle to implement the program, but it was hit & miss & is still in the trial & error stage
Results of having high (or low) latitude/ fidelity	* Program looks fairly the same as the way the frameworks look	* Teachers know district is committed to frameworks & so is principal & they feel pressured to comply & do * Staff development program has been around for 12 years * Teachers are working consciously to improve & they request additional training	* Program is watered down

Descriptor	Site J	Site G	Site H
Evidence of fidelity of school	* Teachers attend inservices to fit their needs	* Principal pushes for high fidelity but teachers would probably do it anyway since they have all received the same training	* Different materials * Different attitudes of teachers
Reasons for fidelity	* Principal monitors classrooms	* Supt. said that teachers were involved in the original decision so that later there could be a push for fidelity when implementing	* Experience of teachers affected fidelity
Results of having high (or low) latitude/ fidelity	* Results for having a press for fidelity & low latitude for adaptation show high student outcomes (i.e. CAP & CTBS scores) & a high degree of commitment to the state framework	* Goal of the district is to implement the framework in all schools in the same way	* Supt. says what they'll teach & teachers determine how they'll get there

Descriptor	Site A	Site L	Site K
Evidence of fidelity of school	* No pressure for fidelity * Some teachers are teaching a structured planned approach	* The high press for fidelity is internal or lateral (from the teachers)	* Teachers do as they want * New teachers differ from experienced ones
Reasons for fidelity	* Principal wants to see teacher to teacher sharing & veteran teachers helping beginning teachers * There is cooperation & teachers praising each other about their program	* Teachers wanted to train others in the math program & they were very excited about the math & had been doing the program for years * Teachers taught workshops & there was a great mentor program	* As long as objectives are met, they can use any instructional strategy
Results of having high (or low) latitude/ fidelity	* A variety of instructional strategies used	* Little or no pressure was needed from the district office to implement the frameworks * Frameworks are basically institutionalized	* Only thing teachers are really doing is starting to use manipulatives * Other teachers haven't adopted the program at all & others slowed their adoption process

Descriptor	Site C	Site F	
Evidence of fidelity of school	* Few adaptations allowed by site	* Text provides scope & sequence with chapters identified * Committee is in process of developing critical units for each & aligning the curriculum to the framework, CAP, & CAT	
Reasons for fidelity	* Closely monitored by site principal who expects teachers to adhere to text, curriculum guide, & pacing chart * Math program is too new & teachers haven't had time to modify anything	* Asst. Supt. puts pressure on principal to monitor program	
Results of having high (or low) latitude/ fidelity	* Teachers stick basically to the framework & curriculum guide & pacing chart	* Teachers follow the framework	

Table 11 Ongoing Assistance

Descriptor	Site D	Site B	Site N
Ongoing assistance	* District office staff & principal of school are planning to continue inservice activities to insure the content of the program continues to be implemented * The inservice opportunities in the new teaching strategies will continue to be offered as evidenced by the 150 workshops the district is offering during the fall and winter of 1988-1989	* Each year the district had a teachers' training summer institute & the subject area focused was related to the state adoption cycle * Inservice sessions were provided at the elementary principals' meetings to ensure the role of the principal as instructional leader * Two math reps (one primary, one intermediate) from each school met with reps from other district schools on a monthly basis to discuss what was happening in math * SUM principals met monthly for inservice & to give input for the formation of the grade level meetings & for presentations at principal councils * Special Education department held monthly meetings for all interested special education teachers	* The 300 representatives from the 51 elementary schools meet each month with the math mentors to give the input that is used to plan the monthly teacher workshops. Demonstrations are included in these meetings and extra teaching material are given to the reps to take back to their schools

Descriptor	Site E	Site O	Site I
Ongoing assistance	* Workshops are offered	* Teachers have requested more training in the use of manipulatives, problem solving strategies, and cooperative learning	* Assistance has been provided over the course of the program implementation by the principal, a math lab aide, mentor teachers, peers, parents, & the Cal Math Project trainers * District also provided assistance with staff development, academic standards, textbooks, & manipulatives * Teachers received assistance with the advent of SIP and Math Power workshops * The Cal Math Project has improved assistance * A former math lab aide was instrumental in getting manipulatives into the school * Teacher to teacher support keeps the staff going on a day to day basis * SIP, mentors, lottery funds and the CMLP have all influenced ongoing assistance

Descriptor	Site J	Site G	Site H
Ongoing assistance	* The principal provides constructive feedback to teachers through formal observations & classroom visitations * The resource teachers have the primary responsibility of training teachers in all areas of the instructional programs * The district math specialist provides assistance to classroom teachers, resource teachers, & principals	* There is a monthly & yearly calendar of in-service activities for math * All grade level meetings for math this year are mandated for teachers	* Mentor teachers are readily available for follow up sessions or special individualized sessions

Descriptor	Site A	Site L	Site K
Ongoing assistance	* District sponsored workshops * School site teachers assisting each other * Out of district workshops & conferences * Principal has arranged for personnel to visit school to present workshops in AIMS, Marcy Cook manipulatives, & cooperative learning * Staff development meetings are held for sharing	* Teachers' needs were identified by site teacher leaders & the principal by observation, surveys, & informal dialogues * Teachers in the MATHTEQ program gave demonstration lessons & provided peer coaching in cooperative learning, problem solving, use of manipulatives, & use of calculators * Teachers shared their expertise with their peers at meetings * District wide workshop sessions on staff development day were presented by district employees & outside consultants on topics identified by district wide needs assessment * Principal allocated $100 to each teacher to purchase math manipulatives	* No external assistants are involved with program implementation * Those who have not attempted to implement the program have not been given formal assistance to change their pattern * Other teachers who have taken part in the inservices have participated in team teaching & peer observations

Descriptor	Site C	Site F	
Ongoing assistance	* This is a weak area * Both internal & external personnel now have priorities other than math * No local funds for staff development * From the central office to the site level there is little assistance with problem-solving, nor is there pressure to provide coaching or resources * Principal offers technical advice through observations & evaluations, modeling teaching strategies by teaching lessons in the classroom frequently	* Assistance to teachers is provided by the Asst. Supt., principals, mentor teachers, & committee teachers through: training, allocation of materials/resources, coaching, emphasis on priority units, identified school focus, understanding what is required, making needed program modifications, evaluation, sharing successful activities, & discussing student performance/outcomes * District commitment & assistance to math include: inservice training, mentor teachers at each site, purchase of required materials, allocation of instructional time, training of math experts at each grade level for each site, district monitoring of the math implementation * Principals offer assistance by: supervisory support, evaluation of classroom teachers, release time for inservice, grade level meetings to discuss curriculum activities, etc. * Mentors & committee teachers discuss problems with their peers	

Table 12 Nature of External Linkages

Descriptor	Site D	Site B	Site N
Nature of external linkages	* No information	* Publishing company providing training	* Publishing companies

Descriptor	Site E	Site O	Site I
ature of xternal linkages	* L.A. County Office of Instruction * Outside consultants who are recognized experts	* California State University at Bakersfield * Fresno Pacific College * Outside consultants	* County, state & national math conferences * Summer workshops of San Diego Math Project

Descriptor	Site J	Site G	Site H
Nature of external linkages	* Cal Poly * Azusa Pacific * County	* No information	* Orange County Office

Descriptor	Site A	Site L	Site K
Nature of external linkages	* Out of district workshops & conferences	* State & county sponsored workshops & meetings * Outside consultants	* No information

Descriptor	Site C	Site F	
Nature of external linkages	* State Department for curriculum & guidance * L.A. County Office of Ed. for math consultants * Private math consultants	* County Office of Ed. Center for Effective Schools program	

Table 13 Teacher Effort

Descriptor	Site D	Site B	Site N
Teacher effort	* Committed to implementing the new teaching strategies * Most have received training in Math Their Way * Training & materials required for the program were in the main paid for by them * Staff as a whole attends workshops * Staff shares ideas freely	* There is peer coaching & modeling of instruction * One teacher attended a special training program in Chicago for one week & became a trainer of trainers for Open Court * Teachers voted 100% to increase their workday to accommodate longer instructional day * The school provided inservices to other schools	* Teachers are just starting to use Open Court & are concerned about the strategies needed to implement it

Descriptor	Site E	Site O	Site I
Teacher effort	* District provided classes to increase their versality at presenting lessons, to increase their understanding of the course of study & how it's used with the text, & to increase their ability to use manipulatives * Grade level meetings are devoted to discussing problems & successes related to the curriculum * Peer observations & coaching are common at the site	* Teachers feel pressured to learn the skills in order to implement the program. * Teachers attend staff development * Teachers take classes * "Core" teachers train others--teaming at the school site	* Teacher effort varies greatly * Some want pre-packaged "show me" materials while others are working closely to solve problems, try new lessons, & get feedback & are willing to risk * All teachers attended CMLP training for a week in June & another full day session in August & October

Table 14 Names of District Cross-Role Teams

Descriptor	Site D	Site B	Site N
Names of district cross-role teams	* K-8 Advisory Committee * Project Team	* Curriculum & Standards Committee * Principals Interested in Teaching Science (PITS)	* Adoption Committee
Team membership of district cross-role teams	* Teachers * District office reps * Principal	* Program Specialist for Science * Director of Staff Training * Principals Interested in Teaching Science (PITS) * Middle school/high school mentor teachers * Assistant Superintendent, Elementary * Deputy Superintendent for Instruction	* District Program Specialist * Principals * Teachers
Selection of members of the district cross-role team	* Teachers volunteered & were then screened by the administrators and Curriculum & Staff Development Services * Principals recommended teachers * Assistant Superintendent recommended principals & the Administrator of Curriculum & Staff Development Services submitted recommendations to Deputy Supt.'s Council for final approval	* Principals Interested in Teaching Science (PITS) volunteered * Mentors were selected by selection process of the district	* Members volunteered

Descriptor	Site E	Site O	Site I
Names of district cross-role teams	* District Planning Team * Instructional Leadership Team * Curriculum & Staff Development Council * Curriculum Study Teams * Professional Development Team * Mentor Teacher Core	* Associate Superintendent of Instruction's Cabinet * Science Curriculum Committee * District Instruction Committee * Elementary Science Committee	* District Cross Role Team
Team membership of district cross-role teams	* Director of Curriculum & Staff Development * Director of Elementary Ed. * Teachers * Principals * Deputy Superintendent of Instruction	* District Science Coordinator * Supervisor of Science Team Teachers * Coordinator of K-3 Curriculum * Director of SICON * Teachers * Principals * Parents * Union representatives	* Principals * Mentors
Selection of members of the district cross-role team	* Instructional Leadership Team volunteered * Curriculum & Staff Development Council volunteered * Teachers on Professional Development Team were selected	* Members of Science Curriculum Committee volunteer, are recommended by principal, or are union representatives * Assistant Superintendent of Instruction appoints members of his cabinet	* Principal of cross role team was selected by Asst. Supt. because of his interest & expertise in science * Mentor selection committee are elected by their peers

Descriptor	Site J	Site G	Site H
Names of district cross-role teams	* Textbook Adoption Committee * Science Committee	* Cross Role Team * Grade Level Teams * Science Committee	* Curriculum Steering Committee * Science Committee
Team membership of district cross-role teams	* Teachers * Resource teachers * Principals * District math/science specialist	* Teachers * Mentors * Principals * Science specialist * Assistant Superintendent of Instruction	* Assistant Superintendent of Curriculum & Instructio * Staff developers * Parents * Teachers * Mentors * Principals
Selection of members of the district cross-role team	* Teachers on Science Committee either volunteer or are selected by the principals * Resource teacher is recommended by principal o district office administrator * District Science Specialist is selected from a pool of school site resource teachers	* Principals & teachers volunteer * Asst. Supt. appoints each principal to a textbook, implementation, inservice, or grade level committee	* Teachers volunteered and were then selected by staff developers * Parents were asked by Assistant Superintendent and staff developers * Principal asked each teacher to join a curriculum committee

Descriptor	Site A	Site L	Site K
Names of district cross-role teams	* Curriculum Review Team	* District Science Committee * Science Curriculum Committee	* Curriculum Committee
Team membership of district cross-role teams	* Elementary principals * Middle school administrator * High school administrator * Supervisor of Compensatory Programs * Supervisor of Special Projects * Science Department Executive (part time high school teacher) * Teachers * Assistant Superintendent, Educational Services * Mentors	* Superintendent * Assistant Superintendent * Teachers * Department chairs * Principals * Business manager * Mentors	* Assistant Superintendent * Teachers
Selection of members of the district cross-role team	* Teachers volunteered	* Most members volunteered	* Teachers were elected by association members * Teachers were appointed by principal

Descriptor	Site C	Site F	
Names of district cross-role teams	* Curriculum Council * District Faculty Council * Staff Development Council * Testing Committee * District Advisory Council	* Textbook Adoption Committee	
Team membership of district cross-role team	* Superintendent * Director of Curriculum & Instruction * Parents * Teachers * Principals * School Board members * Special Education * Consultants * Mentors	* Assistant Superintendent * Site representatives (Teachers) * Principals	
Selection of members of the district cross-role team	* Members volunteer	* Textbook Adoption Committee members volunteer	

Table 15 Unique Characteristics of District Cross-Role Teams

Descriptor	Site D	Site B	Site N
Unique characteristics of district cross-role team	* Project Team is mainly concerned with textbook adoption	* PITS (Principals Interested in Teaching Science) conveyed the goals of the program	* Adoption Committee also included teachers who had a reluctance towards science instruction in hopes that if they found a text that assisted them with science, it would be a good text for all teachers in the district
Type of training to the district cross-role team	* 6 months of training with guest presenters, district office presentations, & a review of the framework * Met 2 times each month	* Mentors received extensive training through staff training department in clinical teaching & cooperative learning * Program Specialist in Science provided ongoing supervision by observing lessons & workshops taught by the mentors	* 1 day to develop a matrix procedures & criteria for making the selection of a text * Really no training given to the Adoption Committee
Outcomes of the training	* Purpose of the training is to insure that all of the committee/team members are highly knowledgeable regarding the framework, latest research concerning the curriculum area under consideration, as well as other information regarding textbook selection process at the state & district levels	* A chronicle of services & training provided relative to the science mentors was kept & there were more requests than the teachers could fill. Workshops were filled to capacity. * Teachers shared their expertise with others	* Adoption Committee selected a text

Descriptor	Site E	Site O	Site I
Unique characteristics of district cross-role team	* None	* Science Coordinator coordinates all activities related to 4-6 science team program implementation	* Members are extremely knowledgeable in science & have a science background
Type of training to the district cross-role team	* Generic training program has given the district a pool of interested & qualified professional teachers, coordinators, & administrators	* Beginning teachers receive 1 week of generic training regarding the district curriculum, clinical teaching, assertive discipline * Some teachers & principals have taken classes at UC Bakersfield & Fresno Pacific College * Mentors have received training during the summer * Outside consultants were used	* No training by the district * They were self trained because of high interest levels in science & a strong desire to improve science instruction & they also had science backgrounds
Outcomes of the training	* Interested & qualified professional teachers & administrators are in the district * Implemented a plan	* A core group of teachers are then trained well enough to train other teachers * Core teachers team with other teachers at the same grade level	* A talented team resulted which made implementing the science framework a reality

Descriptor	Site J	Site G	Site H
Unique characteristics of district cross-role team	* Each member of the team is given an opportunity to support science programs through presentations at inservices, involvement in summer Science Curriculum Committee, coaching teachers, & providing demonstration lessons	* Asst. Supt.'s job fades as cross role team starts to include volunteers, principals, & teachers interested in science	* Staff developers are major players & serve as a liaison with teachers and administrators
Type of training to the district cross-role team	* Resource teacher attends monthly meetings at district, county workshops, & must keep up on all latest research * principal meets monthly with Asst. Supt. of Ed. Services & monthly with Dir. of El. Ed. * Science Committee teachers receive training on the frameworks	* Asst. Supt. & a first grade teacher attended 2 summer institutes at UCI regardin implementation of science	* Attended various conferences * Read research articles * Informal training, on th job, as they go along
Outcomes of the training	* Resource teacher provided demonstrations on new instructional strategies & assisted teachers with lesson plans & provided inservices * Principal got training on math curriculum & their responsibilities to implement the program	* There are 3 people who can coordinate the entire science program * Several teachers were invited to volunteer on cross role teams for science which later developed into grade level committees	* Training sessions were given to teachers by staf developers & mentors * Staff developers implemented a plan along with input from the Science Committee

Descriptor	Site A	Site L	Site K
Unique characteristics of district cross-role team	* Draft for review the district learning goals * Recommend text to the Board	* Supt. chaired the Science Committee & organized & corrdinated training of the committee & facilitated the materials selection process	* None
Type of training to the district cross-role team	* Administrative team gave initial training to Curriculum Review Team regarding framework * Attended conferences regarding framework	* District Science Committee was trained in the elements of the framework & then they led the materials review process at each site * Mentors & other key leaders presented training to Administrative Cabinet * Outside consultants provided training * Toured science programs in the district * Attended conferences	* None
Outcomes of the training	* Cross role members updated staffs on the progress of the Curriculum Committee at early dismissal Monday meetings	* District Science Committee oversaw program implementation in a very general sense & attended more to district program, personnel, & fiscal concerns	* None

Descriptor	Site C	Site F	
Unique characteristics of district cross-role team	* Their role is to align the frameworks with the district curriculum, text selection, assessment measures, & staff development	* The Textbook Adoption Committee developed a common understanding of scope of science program, scope of curriculum K-8, desired outcomes, & developed a common language to aid in their training & coaching at the sites	
Type of training to the district cross-role team	* No formal training but worked through staff development opportunities with other staff	* Asst. Supt. provided training for familiarization of the framework, text selection process & procedures, & brought in trainers for the committee	
Outcomes of the training	* None	* Textbook Adoption Committee members served as experts to provide coaching for the classroom * They developed a common language to aid in their training & coaching at the sites	

Table 16 Responsibilities, Tasks, Functions of the District Cross-Role Teams

Descriptor	Site D	Site B	Site N
Responsibilities, tasks, functions, of the district cross-role teams	* Review the framework & make recommendations on how to best implement it in conjunction with the textbook adoption * Develop criteria for the textbook evaluation process	* District program specialist provides the latest research on science instruction to the superintendent's executive staff, pricnipals & teachers in cooperation with the Director of Curriculum and the Director of Staff Training * District program specialist supervises the purchase of science equipment for the district	* Monitor the pilot programs which had been established & to select a single textbook adoption for the district

Descriptor	Site E	Site O	Site I
Responsibilities, tasks, functions, of the district cross-role teams	* Developed an implementation plan that included a timeline for accomplishing a review & assessment of the currentscience program, a comparison of the existing curriculum with the State Science Addendum Framework, and a timeline & process for rewriting the curriculum so as to align it with that of the state * Strategies for implementation & selection of new materials * A plan for staff development * Wrote the K-6 Science Curriculum Guide aligning it to the state framework & curriculum guide * Recommend staff development activities * Offered input into the process of sriting the curriculum & articulated needs in terms of teaching strategies for implementation & delivery * Review & select a science textbook * Made recommendations for the purchase of supplementary materials * Kept current of issues involved in implementation	* District Director of Elem. Instruction sees that the district science program is implemented * Science Coordinator coordinates all activities related to the 4-6 Science Team program implementation & works with the Staff Development Coordinator to provide the necessary on-going training & upgrades & articulates the science program through grades K-12 * Provides input & direction regarding successes & problems with the program at the building site level * Recommends district financial support for program implementation * Provide specific staff training * Mentors help teachers develop science teaching skills	* Determine & write the district scope & sequence for science * Provide hands-on classroom demonstration lessons * Prepare materials for teachers at all grade levels * Present staff development sessions * Initiated science fairs * Initiated Classroom Critters at all elementary schools * Started Invent America program district wide

Descriptor	Site J	Site G	Site H
Responsibilities, tasks, functions, of the district cross-role teams	* Trained teachers in all areas of the instructional programs * Provide demonstrations on new instructional strategies & assist teachers with lesson plans * Give input to the principal so that local staff needs are dealt with as soon as possible * Determine staff needs & provide appropriate inservice * Monitor & evaluate * Implementation of the science program * Textbook adoption * Make presentations at inservices * Coaching teachers	* Decide the emphasis by grade level * Assist Science Specialist in staff development & writing of the curriculum * Assist Science Specialist with writing of the curriculum * Inservices for teachers * Textbook selection * Develop implementation plan	* Determine focus for the school year * Develop implementation plan * Coordinate implementation plan * Provide staff development * Develop curriculum guides and scope & sequence * Textbook adoption * Alignment of framework with curriculum goals, Tests, & Activities * Coordinates materials & equipment * Alignment of framework with curriculum goals & activities * Handle specific problems and provide ongoing assistance * Monitor & evaluate * Make decisions regarding funding, expenses, etc.

Descriptor	Site A	Site L	Site K
Responsibilities, tasks, functions, of the district cross-role teams	* Presented district plan for curriculum review to teachers * Draft for review the district learning goals for science * Identify a minimum of specific objectives for each grade level in science which were aligned with the state frameworks * Textbook adoption * Recommend purchase of supplies & materials * Monitor & evaluate * Decisions regarding funding	* Fill the gaps identified during the administration/board curriculum audit * Set goals for training & implementation * Selected basic & supplementary materials * Acted as link between the school site & district levels * Textbook adoption	* Serves as needs assessment panel * Serves as a problem solving committee * Keeps communication open between district & schools

Descriptor	Site C	Site F	
Responsibilities, tasks, functions, of the district cross-role teams	* Manage science program implementation * Curriculum development * Staff development * Align state framework with district curriculum * Textbook selection * Assessment measures	* Developed common understandings of the science strands, the scope of the science curriculum K-8 * Developed desired student outcomes * Developed a common language to aid in their training & coaching at the sites * Met with grade level peers & discussed the activities, materials, resources, & student outcomes as seen by the classroom teacher * Provided peer coaching & demonstration lessons at the site * Prepared & presented materials * Textbook selection	

Table 17 Names of School Level Cross-Role Teams

Descriptor	Site D	Site B	Site N
Names of school level cross-role teams	* None	* School SIP Committee	* None
Team membership of school level cross-role teams	N/A	* Teachers * Parents * Community members * Principal	N/A
Selection of members of the school level cross-role teams	N/A	* Teachers volunteer * Principal makes final appointment of staff members & parents	N/A
Type of training to the school level cross-role teams	N/A	* Attended a variety of workshops provided by the district, mentor teachers, county, universities, & the Sierra Club	N/A
Responsibilities, tasks, functions, of the school level cross-role teams	N/A	* Maintained school's science supplies * Distributed science materials * Informed teachers of science workshops * Provided classroom demonstrations * Assisted principal with writing science component for the Comprehensive School Based Plan * Monitored science budget	N/A

Descriptor	Site E	Site O	Site I
Names of school level cross-role teams	* Core Advisory Group * Teacher's Grade Level Teams	* School site cross role team	* School Site Council
Team membership of school level cross-role teams	* Teachers * Principal	* Teachers * Principal	* Principal * Certified staff members * Classified staff members * Parents
Selection of members of the school level cross-role teams	* Volunteer	* Teachers volunteer or serve at the request of the principal	* Selected from interested volunteers
Type of training to the school level cross-role teams	* Trained at Staff Development Center * L.A. County Office of Instruction * Outside personnel	* Outside consultants	* Unknown
Responsibilities, tasks, functions, of the school level cross-role teams	* Advised principal * Shared ideas & strategies for implementation of the science program at the site level * Discuss current issues in science & curriculum * Share strategies, concerns, materials, problems, & solutions * Train teachers in strategies	* Help teachers develop their science teaching skills	* Evaluate & plan as part of ongoing effort toward school improvement

Descriptor	Site J	Site G	Site H
Names of school level cross-role teams	* None	* None	* None
Team membership of school level cross-role teams	N/A	N/A	N/A
Selection of members of the school level cross-role teams	N/A	N/A	N/A
Type of training to the school level cross-role teams	N/A	N/A	N/A
Responsibilities, tasks, functions, of the school level cross-role teams	N/A	N/A	N/A

Descriptor	Site A	Site L	Site K
Names of school level cross-role teams	* None	* School Site Council	* None
Team membership of school level cross-role teams	N/A	* Teachers * Parents * Classified employees	N/A
Selection of members of the school level cross-role teams	N/A	* Nominated & elected by their peers	N/A
Type of training to the school level cross-role teams	N/A	* Principal & science mentor trained them in the key elements of the science framework	N/A
Responsibilities, tasks, functions of the school level cross-role teams	N/A	* Development, implementation, monitoring, & evaluation of the school level plan	N/A

Descriptor	Site C	Site F	
Names of school level cross-role teams	* None	* None	
Team membership of school level cross-role team	N/A	N/A	
Selection of members of the school level cross-role teams	N/A	N/A	
Type of training to the school level cross-role teams	N/A	N/A	
Responsibilities, tasks, functions of the school level cross-role teams	N/A	N/A	

Table 18 Description of the Implementation Plan

Descriptor	Site D	Site B	Site N
Description of the implementation plan	* District developed a textbook adoption/ implementation process in conjunction with the science program * Plan included the following things: * review of the frameworks * criteria for textbook evaluation * piloting of textbook series * awareness inservice * selection of instructional materials * selection/role of school level teacher leaders * selection of focus schools * training teachers & aides at focus schools * implementation inservice * continued teacher leader training * Principals inservice * The above process is coordinated through the Assistant Superintendent, Instructional Support Services & his staff	* Not a written implementation plan for science at the district level * There were clear implementation activities identified in the SIP Comprehensive School Base Plan for science. The plan included the identification of goals, objectives & activities * The science lead teachers roles & responsibilities were outlined * The strategy for implementation was provision for voluntary workshops presented by the lead science teachers for fellow staff members * At the school site, integrated reading & writing instruction are an integral aspect of the science teaching strategies * The Program Specialist, Science P-12 is the coordinator of the district's science program * At least one teacher was identified as the school's science coordinator * Director of Staff Development was instrumental in providing myriad workshops relative to the teaching strategies required for the new science program	* The district had established pilot programs in 1984-1985 to help in the selection of the new science textbook series. Adoption committee was charged with the task of finding a way to integra reading, writing, & computation skills into the science curriculum * There was a specific goal of finding a textbook series that would include problem solving as it relates to the ethical issues which confront the scientifically informed citizen * The district followed the State Department's advice & furnished guidelines for instructional time, recommending that 100 minutes per week be devoted to teaching science in K-3 and 150 minutes per week in grades 4-6 * Science Coordinator helped the teak force monitor the pilot programs & helped choose the text * Participation in the district's staff development workshops was strongly encouraged, but attendance was optional * The principal & Title I teacher assume much

Descriptor	Site D	Site B	Site N
			of the responsibility for coordination of the science program at the site level

Descriptor	Site E	Site O	Site I
Description of the implementation plan	* There is an overall implementation plan called "Integration of Programs" * The plan is published yearly & delineates the focus of program change for the year it is published * The plan focuses the financial & human resources of the district on key areas of program change & identifies sequential planning & implementation effort for program improvement * Phase I of the plan is evaluation & planning * Phase II of the plan is implementation * Phase III of the plan is continuing implementation * Science has been phased out of the integration of change cycle, and there are no activities listed for this year * The coordinator of the program at the district level is the Deputy Superintendent of Instruction * At the site level, the principal is the coordinator of the program	* No written district science program implementation plan * District Science Coordinator is responsible for implementing the district science program * The District 4-6 grade Science Team program has been in operation for the past 8 years * A Science Curriculum Committee is working to develop a K-3 science program & articulating the science program K-12 but a formal implementation process is not being planned * The main strategy/activi[illegible] for implementation was the establishment of a team of teachers to teach the new science program to 4-6 grade students * The district K-3 grade science program consists of the science text adopted for grades 2-3 * The district K-6 science curriculum & textbook were aligned with the state science framework & addendum * The science text acts as the district science program guide * The main goal of the district science coordinator is to have the district science program implemented K-6 and all teachers	* No overall science program implementation plan * Science program began as a grass roots teacher effort & was encouraged & supported financially by the district * The addendum came about the time the first mentors were selected * Strategies that supported implementation were staff development sessions in cooperative learning, critical thinking and hands on science experiments * The addendum concepts were discussed more widely and SIP also sparked the desire at the site level to improve science instruction * There is not a designated science coordinator at the district or at the school & instead one active mentor at the school * The mentor who is considered to be the coordinator for the science program at the district level started Science Power workshops * Mentor teachers got the implementation going--definite emphasis on decentralization & promotin site based decision makers

Descriptor	Site E	Site O	Site I
		using the district adopted science textbook * Pre and post tests for all elementary grades are also being used	

Descriptor	Site J	Site G	Site H
Description of the implementation plan	* No written implementation plan for science * Teachers are required to use the adopted text as their guide * A science committee will work during the summer of 1989 to develop a long range plan & will use the new state science framework as their guide * At the site level, the schools must indicate in their school level plans objectives in science that include hands on activities, inquiry lessons, & the scientific process as well as the number of inservices the school will have to assist teachers in these objectives	* No specific written implementation plan for science * There is a verbal implementation plan shared by the Asst. Supt. and the Elem. Science Program Specialist * The Asst. Supt. states that the framework is the planning document of what is to be implemented because there is a consensus that teachers & administrators agree with the frameworks * The Specialist of the Elem. Science Program speaks of an implementation process as increments over a 3 year period with constant revision * The Science Specialist states that the science program is written using the small step lesson and it broadens and spirals as students move through the grades. * Members of the Science Committee are using the text and then writing objectives & activities * Teachers are taking notes on the weaknesses of the activities which will be discussed at grade level meetings	* There is a written overall implementation plan for the district for science * The first phase consisted of: * media centers to provide science support materials for classrooms * science materials budgeted at school sites * science representatives disseminate information * extensive staff development * The second phase consisted of: * science framework presentations * textbook adoption & the realignment of the curriculum guide to match * hands-on workshops continue * The last phase of the plan includes: * grade level meetings in science content areas * support school plans with inservices * design promotional materials * develop leadership strand for science reps * inservice new textbooks * continue after school workshops with mentors & outside presenters

Descriptor	Site A	Site L	Site K
Description of the implementation plan	* The implementation plan was conceived in two parts. The first part was district orchestrated & designed to formally adopt the curriculum as a Board Administrative Regulation which required a long period of awareness for the Board, administrators, & teachers, training of key cross role team members, development of Board goals & student expectations, adoption of state textbooks, & formal Board adoption. The idea was to formally adopt the new program & then mandate it down to the sites. * The second part of the implementation plan was to charge site principals to implement the program at their school sites	* No written district implementation * The frameworks and the state timeline provide the structure and some of the substance of the plan * After a curriculum audit by the board & administrators, the district used the Science Committee to plan for implementation of the program * The coordinator of implementation at the district level was the superintendent who acted as chair of the Science Committee * While not written, the sequence of activities was clear to staff at all levels, & the systematic structure included the staff in decision making at several points * The school level plan included specific implementation questions and strategies on a form provided by the California State Department of Ed. & served as a tool to address the key concerns identified in the review process	* No overall implementation plan at the district or school * There is a direction. It is very loose, & there are no timelines

Descriptor	Site C	Site F	
Description of the implementation plan	* No plan for science at the district level * The only plan was to align the frameworks with the curriculum & textbook, assessment measures, & staff development	* No formal implementation plan available other than the frameworks & Science Addendum as used by the Asst. Supt. & his own perception of what the curriculum program should be * The SIP plans at the sites included activities for implementing the science program & they were limited in scope * The school plan included needs assessment, instructional improvement, goals, & evaluation criteria * The Textbook Adoption Committee made all major decisions regarding curriculum & text adoption, activities, etc.	

Table 19 Programs and Materials

Descriptor	Site D	Site B	Site N
Programs & materials	* Harcourt, Brace & Jovanovich * KVIE television programs * Harcourt, Brace & Jovanovich lab kits * AIMS materials	* Holt science text (K-6) * Concepts in Science (Harcourt, Brace & Jovanovich) * Tests, activities, & worksheets * Primary kit * Skillbooks * E.S.S. (Elementary School Science by McGraw Hill) * Teachers' resource binder * Blister telescopes * Individual student experiment packets (varied by grade level) * Chemicals & specialized supplies	* Holt Science (1-6) * On site childrens' center houses a menagerie of snakes & reptiles * SCIS Kits (provided by the Lawrence Hall of Science) * Science center with science equipment * Video library of "Slim Good Body Tapes" & a complete series of "The Voyage of the Mimi" * Video equipment & cart * Teacher developed collections & enrichment materials * ISES kits

Descriptor	Site E	Site O	Site I
Programs & materials	* Silver Burdett text	* Holt Elementary Science series (2-6) * AIMS	* Silver Burdett (K-3) * Harcourt, Brace & Jovanovich (4-5) * Live animals * Computer software * Films, filmstrips, videos * Supplementary packet science materials from the science mentor * AIMS * Savi-Selph materials * Weather station * Shoebox Science * Science on a Shoestring * Magnets * Microscopes, slides, telescope * Scales * Pulleys, levers * Rock collections * Magnifying hand lenses * Litmus paper * Dinosaur kits

Descriptor	Site J	Site G	Site H
Programs & materials	* Silver Burdett (K-6) * Moveable science lab	* Holt series * Come With Me Science Set * Science on a Shoestring * AIMS * Resource binder that comes with the Holt series	* Silver Burdett text * SCISS science kits * Balance scales * Shoe box science kits that P.T.A. assembled * AIMS * Weights * Microscopes * Metric materials * Magnets * Tuning forks * Sound boxes

Descriptor	Site A	Site L	Site K
Programs & materials	* Silver Burdett text * Come With Me Science * AIMS	* Holt Science (K-5) * Kits developed by Lawrence Hall of Science * OBIS (Outdoor Biology Instructional Strategies) * SCIS (Science Curriculum & Instructional Activities) * SAVI/SELPH (Science Activities for the Visually Impaired/Science Enrichment for Learners with Physical Handicaps) kits * Science on a Shoestring * AIMS (Activities that Integrate Math & Science) * Come With Me Science	* Silver Burdett (K-5) * Science kits * AIMS * Silver Burdett supplemental kits (K-5) * Microscopes * Bioscopes * Metric measurement

Descriptor	Site C	Site F	
Programs & materials	* Merrill text * Science kits * Science learning centers * Think Lab (computers for science) * Science lab available to all students * Resource center with science equipment available to each teacher	* AIMS * Scott Foresman (supplement) * Microscopes * Magnifying glasses * Science kits * Magnets * Films & filmstrips * Computer software * Insect cages * Live animals	

Table 20 Initial Content, Skills, Awareness Training

Descriptor	Site D	Site B	Site N
Initial content, skills, awareness training	* District provided awareness inservice during first year of each of the text adoption cycles * School level leaders were selected and attended additional inservice programs in order to assist colleagues in implementing * During the second year of each cycle, a pre-service was provided teachers with an initial implementation release day * Science program did not continue follow-up with content inservice activities, but ongoing teacher strategy inservice opportunities were provided * District is offering 150 workshops during fall & winter of 1988-89	* Since 1980 principals K-12 have received training in the use of clinical supervision * Each summer a week long administrators retreat emphasized management leadership skills & curricula strategies for the school district * Year-round schools were used as demonstration schools for teacher training & modeling of instruction & practice sessions were available for the teachers * New teachers are assigned mentor teacher "buddies" & new teachers spent a summer workshop day with the principals & mentor teachers being indoctrinated with the district's philosophy of ed. * The district training cycle coincided with the state textbook adoption cycle * During the first year of implementation following the text adoption, a district wide full day voluntary inservice was offered for teachers * The school had monthly & bimonthly voluntary workshops planned after school relative to the science adoption from 1986-1989 which highlighted specific strands of the science curriculum with teaching	* Occasional workshops were offered to help teachers develop science units & present hands-on science & attendance was voluntary * Hands-on science kits were given to teachers without staff development or training in how to use them & teachers kept their old textbooks * Classes & workshops were offered in cooperative learning

Descriptor	Site D	Site B	Site N
		strategies & integrated learning modeled for various grade levels * During the 1987-1988 school year, every teacher at the site had attended at least 1 inservice relative to science	

Descriptor	Site E	Site O	Site I
Initial content, skills, awareness training	* Sheltered science workshops * Mentor meetings * Sheltered & cooperative learning workshops * Peer coaching workshops * Tactics of thinking * Training of trainers * Elements of instruction workshops * Training for science is limited & not on-going or sequentially cycled * Sheltered science is the only workshop listed for the year * Training for principals is less extensive than that for teachers & includes the following: * school improvement * the Chapter I - principal meetings * the ETN reform leadership series * clinical supervision	* The generic in-service training program that the district has had in place for over a decade serves as a vehicle for initial content & skill training * The basic strands for the District Professional Development Service (PDS) includes the following: * the dynamics of behavior managment, classroom Organization, & time management * the lesson design models of clinical teaching, higher-order thinking skills, & cooperative learning * the follow-up of clinical supervision, peer coaching, & home (site) teams * All beginning teachers are provided with a 1 week training session * Veteran teachers are trained as new components are added * Initial training was provided to the head teacher & four, 4-6 grade science teaching team members & a second part of initial training included training sessions for principals * The science coordinator has kept the principals updated on the progress of the Science Curriculum Committee & brought in science consultants who made presentations to prin-	* Initial training was done to increase the primary staff's awareness of the science improvement when the new textbooks were received at the sites * All primary teachers spent one of the 3 day half sessions being in-serviced by grade level by a mentor teacher who presented a hands-on demonstration of experiments to go with the insured units & materials were prepared & provided to make the science centers that were displayed * Other science training offered by the district took place for upper grades 4-6 at the summer Science Power workshops in which the goal was to make teachers feel comfortable with content, manipulatives, & teaching for understanding * Principals do not receive training in science from the district but are welcomed to attend inservices * Training for subject areas revolves mainly around the textbook adoption cycle at which time there is an emphasis on awareness, content, & skill training & staff meetings & grade

Descriptor	Site E	Site O	Site I
		cipals & teachers on curriculum & pedagogy * Outside consultants provided inservice that teachers had requested * Two science resource teachers served as a trainer of trainers & provided training to individual staff members on the use of hands-on activities & articulating the science program across grade levels & integrating it with other content areas * The district has not had a sequentially cycled training program that is coordinated with the state curriculum alignment or text adoption	level meetings address these areas * Principals have provided release time for teachers to plan & share classroom strategies & management * Workshops on cooperative learning & problem solving are on-going * Clinical teaching is still being offered to new teachers & any others who have not yet attended in the last 8 years has been offered it * There have been 4 training sessions for peer coaching but it is just not taking hold in a big way * One day a year is designated as Professional Growth Day & science has been a focus to address content, awareness, & skill training

Descriptor	Site J	Site G	Site H
Initial content, skills, awareness training	* Four years ago, all schools received the framework addendum & the district office asked that all staffs discuss the implications & effect it would have * Teachers were required to attend workshops provided by the consultants of the adopted textbook prior to beginning the new program * Principals received training on the new science framework & adopted text at the monthly meetings with the Asst. Supt. of Ed. Services & Dir. of Elem. Ed. * Resource teachers received training at their monthly meetings with the Dir. of Elem. Ed. & the district math/science specialist	* The science specialist was a mentor teacher & is trained in peer coaching, but there has not been another mentor since the science specialist in 1983 and 1984. Present science lead teachers came from the science specialist's contacts as a mentor teacher. There are 2 lead teachers at the school & one was originally trained at the Curriculum Implementation Center for Science in which the teacher attended 2 weeks of training & had follow-up throughout the year with 5 hands-on activities * All teachers new to the district must attend a 2 day orientation session which included initial training in the science curriculum * There is a voluntary inservice training called the August Institute which is a one day in-service provided by the district staff * The district level administrators were given initial training in the content of the framework & attended state conducted meetings with teachers & attended local meetings conducted by the Asst. Supt. of Instruction	* Grade level meetings in science content areas were scheduled for after school hours in order to bring awareness to the teachers * After the textbook was adopted & the curriculum guide was revised to align with it, about 25 workshops within 2 years were given regarding waht should be taught in the science program * Extensive training was done in cooperative learning * Many one shot workshops were done that focused on certain topics in the science program * Principals received training on coaching teachers & how to identify what their teaching strategies are & how to evaluate the new teaching strategies * Mentors chose the topics for the sessions they gave & also received input from principals & teachers

Descriptor	Site J	Site G	Site H
		* Mentor teachers provided all of the initial content, skill, & awareness training to the teachers	

Descriptor	Site A	Site L	Site K
Initial content, skills, awareness training	* Mondays have been designated staff development days & the staff development normally includes each month, one day for grade level sharing, one day for inservice & staff development training, one day for SIP component meetings, & one day for teacher preparation time & conferencing. Lots of time is used for teachers sharing & developing activity packets for classroom use & during these meetings awareness & training on the framework have been covered * The mentor teacher for science conducts science training * All teachers who attend out of district conferences are asked to share * Principal invites district office personnel, department execs, & other mentor teachers for sharing * The principal is credentialed as a teacher trainer in clinical teaching & has trained the staff in effective teaching techniques of clinical teaching & also conducts training sessions in clinical supervision for	* Elements of the new science curriculum training began several years prior to the recent adoption cycle * A teacher-to-teacher pattern of training existed. Some teachers brought back ideas to share from Lawrence Hall of Science, another joined a marine science educators organization & encouraged others to join, & another attended AIMS training & shared ideas & materials * At the district level, the curriculum audit was the first formal step in awareness training * The District Curriculum Council (the administrative cabinet) was trained by outside consultants on the key elements of the framework * Site administrators attended Program Quality Review training updates which kept them abreast of the state quality indicators * Staff meetings & district wide, mandatory workshops during minimum days provided awareness training to the teaching staff * The principal presented an overview of the framework & gave each teacher a copy of the document * The textbook adoption	* After the Grade-Level Standards were written, copies were given to each teacher & a faculty meeting was used to review it * New teachers & teachers new to the district are inserviced in the Grade-Level Standards content & purpose * Following the textbook adoption, teachers were given the opportunity to attend voluntary, paid inservices given by the publishers * There has been no specific training offered for skillful implementation, but voluntary, paid inservices in the scientific method, cooperative learning, & AIMS has made teachers more knowledgeable * All subject matter is trained at the same time & there is no sequential cycling * The district encourages improvement & offers assistance informally

Descriptor	Site A	Site L	Site K
	the county & the district	process with complete analysis of each state-approved program based on the components of the framework was a step in the awareness training process * All teachers participated in various types of skill training * Publisher representatives presented a full day of inservice * District staff development days offered hands-on workshops demonstrating varied concepts, emphases, & strategies of the framework linked with the text * A science mentor presented workshops on inquiry skills, problem solving, & critical thinking at district sponsored staff development days * Teachers were allowed to attend at least on conference at district expense each year * Three teachers joined a marine science educators association & attended conferences sponsored by this organization * Full-day district programs covered cooperative learning & problem solving * Mentors were sent out for training & then trained the teachers	

Descriptor	Site C	Site F	
Initial content, skills, awareness training	* During the first year, the Science Curriculum Committee worked with a county office consultant to align the text with the framework & this was an informal training process for the committee participants only * The Science Committee returned to their sites & conducted formal meetings to teach the staff about the new curriculum & presented the curriculum concepts from the framework, referenced those to the text, and handed out to all teachers the alignment chart with suggested activities & supplementary resources * During the second year & summer the Science Committee created staff development sessions that would help train all staff throughout the district * During the third year, the Science Committee developed an assessment tool for science instruction--a pacing chart with assessment activities & student behavioral expectations for each grade level	* Science inservice was by grade level & the teachers met together to discuss the units & strategies for implementing the units * The initial introduction of the units included a 3 hour orientation to the units followed by a critical thinking workshop in the afternoon	

Table 21 Administrative Commitment, Pressure, and Monitoring

Descriptor	Site D	Site B	Site N
Administrative commitment, pressure, & monitoring	* No one at district or school is monitoring the science program for fidelity of program implementation * Lack of coordination of the content & a wide range of time spent by staff in teaching science	* Program specialist for science served on State Committee responsible for the development of both the state framework for science & the addendum & the principal was a member of PITS * Principals attended all after school workshops * PTA & SI made funds available * $16,000 was approved by principal for equipment * $200 per elementary school was augumented from district general revenue limit * $200 per teacher from school budget * Foundation established for trips to NASA Space & Rocket Center * Principal keeps Science Scope & Sequence Chart in the office * Principal attended all after school workshops & administrators are frequently the planners & presenters * Principal served as chaperone on science field trips * Principal served on Textbook Adoption Committee * Program specialist is considered expert in science because of his background * Principal monitors pacing of teachers' science lessons * Workshops at sites are available & mentors'	

Descriptor	Site D	Site B	Site N
		workshops were "sell-outs" * Schools are expected to cover priority units by the district * Principal uses Science Scope & Sequence Chart in his office * Principal applies pressure by the chart in his office, the 3-way conferences that are held, & he records the science units that are taught by the teachers * Lou and SoC were first being introduced to determine concerns of staff but no information how it turned out	

Descriptor	Site E	Site O	Site I
Administrative commitment, pressure, & monitoring	* Principal uses Core Planners to inform faculty & staff of goals, but science goals weren't discussed * Principal did not attend initial district workshops for implementation * No faculty meeting at school site this year regarding the importance of science * No ongoing training sessions except for Sheltered Science & principal did not attend * Teachers do not perceive administrators as being committed to science program * Principal is perceived to be a resource for assistance but not an expert * Director of Curriculum & Instruction and the Deputy Supt. are perceived as the experts * Mentors & retired teachers are available for assistance * Teachers feel no pressure to implement the program & there are no timelines with expectations * Peer coaching is available * $200,000 - $260,000 was allocated for staff development by the school board, but this is for staff development in general & not just science * Principal determines concerns of staff & extent of implementation through daily classroom observations	* Principal got a second Masters degree in curriculum * Science Coordinator is working with the Science Coordinator of Fresno Unified School District on recommendations to the State Science Framework Committee on changes to the new State Science Framework * All administrators attend district scheduled workshops & some attend workshops outside the district * District funding for inservice, supplies, & science materials has increased in proportion to the district's increase in enrollment * There is existence of a district maintained environmental study facility (SICON) located at the edge of King Canyon National Park * Science Coordinator meets with members of the 4-6 grade Science Team on almost a daily basis & principal at individual sites regularly to discuss difficulties in implementation & specific training needs * Principal & staff believe that science is a high priority of the district * One main goal is to develop a primary science	* No administrator appearance at training sessions * Large amounts of money for staff development & materials * SIP funds used for materials * PTA funded Classroom Critters program * $20,000 lottery grant to one mentor to get the program going * Science was written up as part of the SIP plan * Science supplies are maintained * The principal & 5 mentors are perceived as the experts, but there is no one in the district office who is perceived as the expert * Science aide was hired to assist teachers with ordering supplies & the organization of all the materials for science * One principal & 5 mentors decided everything * Principal provides release time so teachers can plan & share classroom strategies & managment * Teachers were afraid to teach hands-on science at first but are now feeling more comfortable with it * Both mandatory & voluntary staff development * Beginning teachers receive clinical teaching

Descriptor	Site E	Site O	Site I
		program & implement it in 1989-1990 * Science Coordinator helped with the original science program 8 years ago & there is an expert status of administrators & some are the best in the state * Principal developed his own inservice plan which has provided 2 workshops on Project AIMS * Mentor teacher coordinator was appointed in August 1988 & has been working on furthering the training of mentor teachers * During the past 8 years, the program has grown from 1 Science Coordinator & 9 Science Team teachers to a Science Coordinator, a Science Team Supervisor, & 18 Science Team teachers * Principal rewrote the SIP plan to develop science in the primary grades * Principal observes for 1 1/2 hours 3 times a week * Pre & post tests are used to make sure the program is being implemented * Beginning teachers must participate in a 1 week training course on target teaching, etc. * Many teachers & administrators who are science advocates apply pressure from the bottom up * State Dept. & others visit the district to observe	* Teachers put pressure on themselves & also receive it from the one principal & 5 mentors * Concerns are determined informally by talking to principal and 5 mentors & each other * Principal monitors the scope & sequence for insured units at each grade level & oversees budget allocations to include liberal support for consumable science materials, etc. * Principal does walk throughs to determine extent of implementation * There are 4 critical units that are required at each grade level & are called insured units which each teacher must do

Descriptor	Site J	Site G	Site H
Administrative commitment, pressure, & monitoring	* Principals are required to attend all workshops on curriculum that teachers attend * $80,000 spent to train teachers on lesson design & re-train teachers * Teachers have all necessary materials * Teachers are provided with staff inservices, cross age tutors, release time for training sessions, & a resource teacher who is responsible for the science program * The Science Resource Teacher is the expert & School Site Science Committee members are looked upon as lead teachers in science * High school teachers were trained in science at Cal Poly Pomona & then they had to train at least 1 elementary teacher from each school & these 30 elementary teachers had to train the teachers at their schools * National Science Foundation & Jet Propulsion Lab provided 4 weeks of training during the summer * Regular school site visitations are made by all central office administrators * Principal makes classroom visits to observe implementation * There is a timeline for adoption & implementation	* Asst. Supt. has attended two 3 week summer science institutes at UCI, presents science workshops in the district & the principal has a strong background in training in scientific inquiry methods & experiments * Science Specialist has workde on Science Framework at the state level * Principals do not attend science inservices * Principal used site money for science materials * Creation & funding of the Elementary Science Specialist Position * $15,405 budgeted for science staff development * District wide science fair K-12 * Created a materials supply center * C.T.I.I.P. grant of $2,000 for science materials * Principal supported "environmental camp" * Science Specialist is the expert in the district & next year her job will probably be full time * Bottom-up pressure in the district since actions of more skilled & enthusiastic teachers appear to create "self pressure" to strive towards excellence * Both mandatory & voluntary staff development * Science Mentor schedules	* Administrators have attended & given countless workshops * Administrators appeared at training sessions but not this year * Science materials are sadly depleted & resources aren't there to replace them * Principal requires teachers to state science ojbectives in their monthly goals, but that's about all the pressure * No school site science workshops this year * No administrative pressure this year on science * Mentors are readily available * Principal hasn't stressed science this year as much as in the past * A timeline of general expectations for the school year are given * Teachers feel no pressure on science this year * Initial staff development in science was mandatory but now the workshops in science are voluntary * Teachers expressed their concerns to the principal but not now * Principal monitored science in the classroom but not much now

Descriptor	Site J	Site G	Site H
	* Parents are very involved with awards ceremonies & give indirect pressure to teachers that students must succeed * There is a district science fair * Principal puts out bulletin regarding science information * Principal has open door policy so teachers can discuss concerns * Principal does walk throughs & observations to observe implementation * There are regular school site visitations made by all central office administrators	lots of inservices & principal sends a weekly memo to each teacher about inservices in the district * Principal talks to teachers & observes to address concerns & also observes science experiments & does daily walk throughs * The mentor & principal expect teachers to implement required areas & use hands-on experiences with materials & manipulatives	

Descriptor	Site A	Site L	Site K
Administrative commitment, pressure, & monitoring	* Principal gives training sessions in clinical teaching * Science materials are somewhat lacking * Principals are held accountable for student achievement on the CTBS as part of their evaluation by the Supt. & must file written reports to the Supt. twice a month regarding their progress toward the goals * Principal attends training sessions * Principal is instructional leader at the school * Lots of staff development * Supt. & Asst. Supt. make frequent classroom visits * Yearly goals are determined but unknown about the timeline * Mentors assist mostly beginning teachers * Teachers accept the frameworks as being good & there is light pressure to teach science * Professional teachers who put pressure on themselves * Principal has a decentralized budget & can attend whatever conference or workshop he wants * Principal sends home a weekly newsletter * Principal determines the concerns of staff through informal discussions	* Principal trained the entire staff including support staff in the framework & model curriculum guide * Supt. (as chair of Science Committee) led the review, selection, & adoption of the science program * Principal attended & presented training sessions * Budget priorities were established based on gaps between the framework and district science program * Release time was scheduled so teachers could observe science programs at other sites * Continued allocation of funds but inconsistent * Principal organized the annual science fair * Supt. decided to buy texts instead of hands-on materials when teachers argued over which they should buy * Principal coordinated school wide activities such as Dinosaur Days, science fair, science oriented assemblies, planetarium from Lawrence Hall of Science * Principal is perceived as knowledgeable but not an expert * No science mentor, only during implementation * Teachers were aware of	* Administrators do not attend training sessions * District allowed teacher to go to Fresno AIMS Center for intense training * Lottery funds used for inservices & manipulatives * Teachers introduce mini-lessons in AIMS & cooperative learning at faculty meetings * Teachers do not perceive the principal as an expert * Provide in-services that emphasize hands-on learning, inquiry approach & cooperative learning, & AIMS * Principal gives release time for peer observation & coaching * Teachers do peer observations & team teaching * Teachers are expected to teach certain topics each year in order to prepare students for competition in the Science Olympics * Principal looks for better science characteristics during his evaluations & also asks for improvement goals & strategies within the trimester plans * Those teachers who want to improve voluntarily attend inservices * No district monitoring of science

Descriptor	Site A	Site L	Site K
		little administrative monitoring beyond the classroom visitations & observations * Teachers perceived that the text use was an acceptable minimal level of implementation & that pressure beyond that came from within the staff * Principal wanted teachers to write goals for science for the year * School plan for science was mandatory for the teachers to implement * Many teachers lacked confidence in their ability to teach science * Professional teacher-to-teacher press for implementation & they pressed others to include the content, strategies, & emphases found in the framework * Curriculum audit in science determined where the gaps & concerns were & surveys were also sent to the teachers * Principal visits classrooms formally & informally * Supt. monitors classrooms	

Descriptor	Site C	Site F	
Administrative commitment, pressure, & monitoring	* Principal demonstrates lessons * Board gave $20,000 for summer work on math & science * Teachers do not perceive administrators as being committed to science program * No ongoing assistance or program facilitators * Only timeline is the Pacing Chart * No staff development in science this year * No pressure from anyone * Monitoring & pressure are weak in science * Support for science has become symbolic at the district & is filtering down to the school site	* Principal provides resources, training, & materials toward achieving the goals * Lottery funds are used * District provides training, release time for curriculum development, workshops, & materials for sites * Principal is a resource person, not an expert * Principal focused teacher evaluation on science for the 1988-1989 year as well as provided supervisory assistance to the teachers * Asst. Supt. meets with principal to discuss implementation * SIP plan includes a timeline with expectations * Textbook Adoption Committee members serve as experts who provide coaching for the classroom & the mentors also provide coaching & give demonstration lessons * Inservices are mandatory * "Parent Guides to Curriculum & Expectations" are distributed for each grade level throughout the district * Principal does walk throughs & talks informally to teachers	

Table 22 Extent of Latitude Given by District

Descriptor	Site D	Site B	Site N
Extent of latitude given by district	* No one is monitoring the science program	* District wants specific units covered	* Teachers had text & materials dumped on them without much training how to use the materials * Teachers are all doing their own thing * Some teachers even kept their old textbooks
Extent of latitude given by school	* No one is monitoring the science program	* Principal keeps track of what units are taught as well as the pacing, themes, strategies, & materials	* Lot of latitude given to teachers
Reasons for latitude	* No one is monitoring	* School allowed limited latitude & required fidelity to the district goals & objectives	* Unknown
Evidence of fidelity of district	* No monitoring or pressure being applied by the district	* District allowed adaption at the local level	* Teachers had text & materials dumped on them without much training how to use the materials * Teachers are all doing their own thing * Some teachers even kept their old textbooks

Descriptor	Site E	Site O	Site I
Extent of latitude given by district	* District has allowed teachers to deviate from program as written * Large variance between district vision & actual program	* All teachers must follow district curriculum & 4-6 Science Team concept & use the text	* Depends on each teacher
Extent of latitude given by school	* District has allowed teachers to deviate from program as written. * Large variance between district vision & actual program	* Principal is advocate of 4-6 Science Team concept & teachers must follow it	* Science program depends on the teacher * Some teachers do a lot of science while others do very little
Reasons for latitude	* Unknown	* All teachers must follow 4-6 Science Team concept which has been in place for years	* Belief that if teacher doesn't have the inclination for it, science won't happen
Evidence of fidelity of district	* No strong press for fidelity	* Teachers must use the district curriculum & the 4-6 Science Team concept & text	* There was a goal for fidelity but not a press for it

Descriptor	Site J	Site G	Site H
Extent of latitude given by district	* The district follows the program in the science text & teachers are required to follow the content in the text * Every school must use the science lab	* Supt. insisted that teachers & administrators got together & decided what would be done to insure uniformity throughout the district--all schools are to be the same	* Every teacher in the district determines how much time will be spent in science each week
Extent of latitude given by school	* Teachers are required to follow lesson design in their science lessons & to use manipulatives, hands-on, & the scientific process * Science varies according to teachers' experience	* None given to the schools * All must follow lessons for science that are indicated by the science curriculum	* Every teacher in the school determines how much time will be spent in science each week * Varies by teacher as well as by grade level
Reasons for latitude	* District requirements	* Supt. wanted one program for all schools * Science Specialist believes that if students take the future Science CAP then they must all be prepared through the curriculum	* District doesn't have a policy for required minutes of science each week
Evidence of fidelity of district	* District curriculum is centralized * Administration monitors implementation	* All schools are using the district curriculum for science	* One school has an entire science lab while at other schools the materials for using hands-on are used up

Descriptor	Site A	Site L	Site K
Extent of latitude given by district	* Great latitude in implementation of the program	* No formal administrative pressure to implement the thematic emphases or the instructional strategies of the framework, but there was pressure to teach the content through the use of the new text	* Teachers who are willing to change attend in-services while others don't
Extent of latitude given by school	* Great latitude in implementation of the program	* Teachers must use text & also participate in the Science Fair & use materials selected by the Science Committee, but the rest is up to them to decide	* Inservices aren't mandatory, so teachers do as they want
Reasons for latitude	* Buy-in of teachers * Principal is a cheerleader & lends support & assistance * Teachers share & encourage each other	* Only pushed teachers to use content in the text & left the rest up to them	* Inservices are voluntary
Evidence of fidelity of district	* No pressure for fidelity * Some are teaching a structured planned approach	* Variability throughout district * Teachers doing own thing	* Each school differs

Descriptor	Site C	Site F	
Extent of latitude given by district	* District provided a great amount of latitude for school site	* Teachers must follow the frameworks	
Extent of latitude given by school	* The teachers are experienced & it's left up to them to teach the concepts	* Teachers are required to teach 4 science units at each grade level but may not teach a unit that has been developed for another grade level, but they may teach more than 4 units	
Reasons for latitude	* District feels the teachers are good & that it's up to them to teach the concepts	* Teachers are expected to follow the frameworks	
Evidence of fidelity of district	* District expects site to adhere to text, curriculum guide, & pacing chart	* Teachers follow the frameworks	

Table 23 Evidence of Fidelity of School

Descriptor	Site D	Site B	Site N
Evidence of fidelity of school	* Wide range of time spent teaching science & each teacher is doing own thing	* Principal closely monitors fidelity by Science Scope & Sequence Chart & by how resources were allocated	* Teachers had text & materials dumped on them without much training how to use materials * Teachers are all doing their own thing * Teachers don't perceive science as being very important * Some teachers even kept their old text
Reasons for fidelity	* No state or district tests are being used to test science * No one at district or school is monitoring or applying pressure * Teachers aren't following science materials	* Principal was a key figure in science implementation	* Not much fidelity because teachers did not receive proper training in use of materials
Results of having high (or low) latitude/ fidelity	* Science program varies tremendously	* District allowed adaptation at the local level to fit the school's needs assessment, but goals of district still had to be addressed	* Teachers had text & materials dumped on them without much training on how to use the materials & thus each developed own ways of teaching the science program

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Descriptor	Site E	Site O	Site I
Evidence of fidelity of school	* No strong press for fidelity at school	* Teachers must use district curriculum & the 4-6 Science Team concept & text	* Depends on teacher training & inclination to do it
Reasons for fidelity	* At the site level there is concern about the amount of work required of the site administrator, given his other responsibilities, to continue to press for and monitor for fidelity * Two concerns expressed were related to the number of limited English speaking children enrolling at the school and the increased difficulty of communicating with them effectively & the rapidly increasing enrollment of the school which made staff stability a problem	* Commitment of superintendent on down to continue the science program which has been in place for 8 years	* Depends on teacher training & inclination to do it
Results of having high (or low) latitude/ fidelity	* Teachers have deviated from the program as written and there has been no strong press for fidelity at the district or the school site	* The science program had been implemented for the last 8 years as designed. Because of principal support, teachers are teaching science & requesting more training & primary teachers are planning themes for the year & sharing ideas	* Some teachers hit science hard & are on top of it while others are still trying

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Descriptor	Site J	Site G	Site H
Evidence of fidelity of school	* Teachers attend inservices to fit their needs	* Principal pushes for high fidelity but teachers would probably do it anyway since they have all received the same training	* Many teachers have quit using the hands-on approach because the science materials are all gone
Reasons for fidelity	* Principal monitors classrooms	* Supt. said that teachers were involved in the original decision so that later there could be a push for fidelity when implementing	* The science materials are severely depleted
Results of having high (or low) latitude/ fidelity	* Results for having a press for fidelity & low latitude for adaptation show high student outcomes (i.e. CAP & CTBS scores) & a high degree of commitment to the state framework	* Goal of the district is to implement the framework in all schools in the same way	* Teachers are all doing their own thing in science now & are also too busy worrying about other frameworks instead

Descriptor	Site A	Site L	Site K
Evidence of fidelity of school	* No pressure for fidelity * Some are teaching a structured planned approach	* Some teachers are using the next versus the teachers who are using the hands-on approach	* Teachers do as they want * New teachers differ from experienced ones
Reasons for fidelity	* Principal wants to see teacher to teacher sharing & veteran teachers helping beginning teachers * There is cooperation & teachers praising each other about their program	* Little press for fidelity beyond the required use of the adopted text	* As long as objectives are met, they can use any instructional strategy
Results of having high (or low) latitude/ fidelity	* A variety of instructional strategies used	* Administrators viewed the adoption of a common text & the requirement to teach science regularly as important & using that text as a necessary step toward a more consistent science program	* Teachers have integrated science in the curriculum for a long time since they had no text * Great variability in teaching ability in district

Descriptor	Site C	Site F	
Evidence of fidelity of school	* Teachers adhere to text, curriculum guide, & pacing chart	* Teachers follow activities & strategies as developed by committee	
Reasons for fidelity	* Teachers stick to what district wants * Teachers don't understand the science curriculum enough to become "hot shot" science teachers	* Staff development to address framework implementation & teaching strategies	
Results of having high (or low) latitude/ fidelity	* Teachers aren't really using much of the hands-on techniques or incorporating ethical/social issues into the science program * Watered down science program * District has turned its emphasis to other curriculum areas & isn't providing the resources it once did	* Teachers' amount of time on science varies, but when it's taught it follows the framework	

Table 24 Ongoing Assistance

Descriptor	Site D	Site B	Site N
Ongoing assistance	* The science program is receiving no further in-service support for the content of the program except if individual teachers utilize the school's lead teacher or request a mentor	* During the 3 year pre-adoption stage the program specialist for science assisted the 20 Adoption Committee members by providing in-service in the latest research relative to science * Directors of Elementary Education had monthly meetings with the principals they supervised at which time the science curriculum/textbook was discussed * The Asst. Supt. had a monthly meeting at which the 51 elementary principals were required to attend * The 3 lead science teachers at the school site continue to increase their own skills & knowledge & provide voluntary in-services to teachers * Principal's bi-monthly curriculum meetings focused science since 1986	* Workshops are offered by the district or nearby colleges

Descriptor	Site E	Site O	Site I
Ongoing assistance	* No provision for ongoing staff development and ongoing support at the site level * Sheltered science is the only workshop listed for the year	* Staff development will continue to provide generic training for teachers to develop teaching skills that will be transferable across all content areas * The new thrust will not only be cycled to correspond with the state framework cycle but will include pedagogical, curriculum content & teaching strategy training as well * Teachers throughout the district have requested help in upgrading the primary Science Curriculum, integrating science into other content areas & improving articulation of the science program K-12 * Teachers have also requested more training in the use of hands-on activities, problem solving strategies & cooperative learning	* Peers and grade level teams work together to help each other * The site mentor provides demonstration lessons at the school

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Descriptor	Site J	Site G	Site H
Ongoing assistance	* The principal provides constructive feedback to teachers through formal observations & classroom visitations * The resource teachers have the primary responsibility of training teachers in all areas of the instructional programs * The district math/science specialist provides assistance to classroom teachers, resource teachers, & principals	* There is a monthly & yearly calendar of inservice activities for science * All grade level meetings for math this year are mandated for teachers	* Science is on a maintenance schedule. There are not as many workshops scheduled, but mentors are readily available

Descriptor	Site A	Site L	Site K
Ongoing assistance	* District sponsored workshops * School site teachers assisting each other * Out of district workshops & conferences * Principal has arranged for personnel to visit school to present workshops in AIMS, Marcy Cook manipulatives, & cooperative learning * Staff development meetings are held for sharing	* The principal provided technical support through awareness training early in the process & through organized ongoing training * Principal allocated funds for the training of staff in the science methods & supported the annual science fair * Principal organized other school wide science activities such as assemblies & special presentations	* No external assistants are involved with program implementation * The Supt. & Asst. Supt. used a Cal Grant loan & sent a teacher to be trained in AIMS & then offer inservices * Asst. Supt. arranges inservices & provides funding for materials

Descriptor	Site C	Site F	
Ongoing assistance	* This is the weakest area Both internal & external personnel have priorities other than science * From the central office to the site level, there is no assistance with problem-solving nor is there pressure to provide coaching or resources * District office continues to support the Curriculum Committee in science by meeting once a month & planning for evaluation of the assessment instrument, evaluation & feedback on the Pacing Chart, & planning for a district-wide science fair * The principal models teaching strategies by teaching lessons in the classroom frequently & serves on curriculum committees * There are no local funds for staff development	* Assistance to teachers is provided by the Asst. Supt., principals, mentor teachers, & committee teachers through: training, allocation of materials/resources, coaching, emphasis on priority units, identified school focus, understanding what is required, making needed program modifications, evaluation, sharing successful activities, & discussing student performance/outcomes * District commitment & assistance to science include: inservice training, mentor teachers at each site, purchase of required materials, allocation of instructional time, training of math experts at each grade level for each site, district monitoring of the science implementation Principals offer assistance by: supervisory support, evaluation of classroom teachers, release time for inservice, grade level meetings to discuss curriculum activities, etc. * Mentors & committee teachers discuss problems with their peers	

Table 25 Nature of External Linkages

Descriptor	Site D	Site B	Site N
Nature of external linkages	* No information	* Lawrence Hall of Science * Sierra Club * Davis Science Institute	* High school students provide demonstrations to classes * U.C. Davis presents special assemblies

Descriptor	Site E	Site O	Site I
Nature of external linkages	* L.A. County Office of Instruction	* California State University at Bakersfield * Fresno Pacific College	* National science convention * UCSD 3 year science institute program

Descriptor	Site J	Site G	Site H
Nature of external linkages	* Cal Poly * Azusa Pacific * Training sessions through Jet Propulsion Lab * National Science Foundation * County	* Universities gave special training in science & administrators attended	* Lawrence Hall of Science

Descriptor	Site A	Site L	Site K
Nature of external linkages	* Out of district workshops & conferences	* Outside consultants * Lawrence Hall of Science * National Marine Science Educators Association * AIMS	* No information

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Descriptor	Site C	Site F	
Nature of external linkages	* County Office consultants	* County Office of Ed. Center for Effective Schools program	

Table 26 Teacher Effort

Descriptor	Site D	Site B	Site N
Teacher effort	* No training in content is available anymore * Teachers are committed to implementing the new teaching strategies * No coordinator of the science program so teachers are teaching what they want * Teachers are interested in using & refining the teaching strategies of the science program	* Teachers attend workshops, but focus is on other subject areas now and not science * Interest in learning, applying, and refining skills is sporadic throughout the district and depends on the individual principal at the school site & if science should be emphasized or not	* Few teachers appear to care about science. * Workshops are voluntary, but some teachers do attend

Descriptor	Site E	Site O	Site I
Teacher effort	* Teachers at site were enrolled in district provided classes to increase their versality at presenting lessons * Grade level meetings are devoted to discussing problems & successes related to the curriculum, including the science program * Peer observation & coaching is common at the sites & as a consequence ideas, techniques, & strategies are shared across grade levels	* The 4-6 science program has been going on for 8 years * Teachers are skilled & knowledgeable due to classes, a 12 year staff development program, & "core" teachers training others	* Teacher effort varies according to the teacher * Some do very little science & are struggling with teaching strategies while others have mastered it * Teachers assist each other & also have support sessions

Descriptor	Site J	Site G	Site H
Teacher effort	* Many teachers attend Saturday workshops even if the school does not pay * Staff members are working on MA degrees & are kept current on the latest research * Teachers take courses at Cal Poly & Azusa Pacific	* Teachers attend mandatory & voluntary workshops in hands-on problem solving * Some are doing team teaching	* Teachers attend workshops on restructured days that are mandatory * Teachers attend voluntary workshops * All teachers have received training in cooperative learning * Teachers can contact mentors by phone when they want assistance

Descriptor	Site A	Site L	Site K
Teacher effort	* Teachers coach teachers * There is a sense of collegiality & a lot of sharing among teachers	* Amount & type of training varied greatly for each teacher * Inservices were usually voluntary * Most attended training beyond the required site training * Training was not as organized as it was for math * There is a condition of "text teachers" versus "hands-on teachers" in the area of science * Peer observations are done	* All inservices are voluntary * Good teachers attempt to improve while others choose not to attend

Descriptor	Site C	Site F	
Teacher effort	* No mentors this year * Science lab is not being used * Teachers really don't understand the pedagogy they should be using & are reverting back to teaching lessons out of books without any concrete materials * Science has "gone to the bottom of the stack" * Pacing Chart is overwhelming * Focus has gone to other subject areas	* Teachers attend district workshops in critical thinking, inquiry, & problem solving techniques * Teachers attend workshops on their own	

Appendix 16

END

U.S. Dept. of Education

Office of Education
Research and
Improvement (OERI)

ERIC

Date Filmed

March 29, 1991